APPENDIX E

Biological Resources Analysis and Supporting Information

APPENDIX E-1

Tree Inventory Report

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

December 5, 2023

Kerri Watt
Director of Entitlements
DeNova Homes, Inc.
1500 Willow Pass Court
Concord, CA 94520

Re: Updated *Tree Inventory Report*, 19320 Sonoma Highway, Sonoma, California

Kerri,

Attached you will find our updated *Tree Inventory Report* for the above noted site in Sonoma. A total of 93 trees were evaluated, and this includes all trees that are present over 3 inches in trunk diameter and located in the area of proposed development. This report is based on a revised development plan that is different than the one originally evaluated.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also provides an assessment of expected impact for each tree based on the development plan that was provided, as well as recommendations for preservation or removal. A *Tree Location Plan* shows the location and numbering sequence of all trees. Also included are a *Fencing Detail, Tree Preservation Guidelines*, and *Pruning Standards* for your reference.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it is the responsibility of the client to provide that direction.

EXISTING SITE CONDITION SUMMARY

The project site consists of an existing residence with an open field behind it.

~ Voice 707-935-3911 Fax 707-935-7103 ~

EXISTING TREE SUMMARY

Native trees include Coast Live Oak, Black Oak, and Valley Oak.

Non-native trees included Glossy Privet, Grecian Laurel. Flowering Pear, Fig, Chinese Pistache, Japanese Loquat, Xylosma, Plum, and Edible Pear.

CONSTRUCTION IMPACT SUMMARY

The following summary of impacts is provided:

(26) Trees that appear to be preservable

(67) Trees that require removal due to expected construction impacts

(3) Missing numbers

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
19320 Highway 12
Sonoma, CA

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
1	*Quercus lobata*	Valley Oak	12	25	12	4	3	3	2
2	*Pyrus communis*	Pear	2+4+5+6	12	8	3	3	3	2
3	*Quercus lobata*	Valley Oak	6	25	10	4	3	3	2
4	*Quercus lobata*	Valley Oak	6	18	10	4	3	3	2
5	*Quercus lobata*	Valley Oak	7	25	12	4	3	3	2
6	*Quercus lobata*	Valley Oak	11	18	12	4	3	3	2
7	*Quercus agrifolia*	Coast Live Oak	6+10+10+14+11	30	20	4	2	2	1, 6, 7, 8, 9
8	*Quercus agrifolia*	Coast Live Oak	4	10	10	4	3	3	2
9	*Quercus lobata*	Valley Oak	19	45	24	4	3	3	2
10	*Quercus agrifolia*	Coast Live Oak	5+7+12	14	15	4	3	3	2
11	*Quercus agrifolia*	Coast Live Oak	5	10	10	4	3	3	2
12	*Quercus agrifolia*	Coast Live Oak	5+5+10+11	25	16	4	3	3	2
13	*Quercus lobata*	Valley Oak	16	40	16	4	3	3	2
14	*Quercus agrifolia*	Coast Live Oak	5	14	8	4	3	2	1, 6, 7, 8, 9
15	*Quercus lobata*	Valley Oak	11+12	25	18	4	2	3	2
16	*Quercus lobata*	Valley Oak	11+9	25	18	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
17	*Quercus agrifolia*	Coast Live Oak	4	12	6	4	3	3	2
18	*Quercus lobata*	Valley Oak	21	45	24	4	3	3	2
19	*Eriobotrya japonica*	Japanese Loquat	5+3+3+2+1	10	8	4	3	3	2
20	*Quercus agrifolia*	Coast Live Oak	4	21	8	4	3	3	2
21	*Quercus agrifolia*	Coast Live Oak	7	35	12	4	3	3	2
22	*Ligustrum lucidum*	Glossy Privet	6+7	25	10	4	3	3	2
23	*Quercus agrifolia*	Coast Live Oak	6	25	12	4	3	3	2
24	*Quercus lobata*	Valley Oak	48	50	30	3	3	3	2
25	*Xylosma congestum 'Variegata'*	Xylosma (off site)	6+6+7+8	25	14	3	3	3	2
26	*Ligustrum lucidum*	Glossy Privet	5+6+6+8+12	35	12	4	3	0	1
27	*Quercus agrifolia*	Coast Live Oak	15+24	45	24	4	3	0	1
28	*Prunus domestica*	Plum	2+4+5+8	21	12	3	2	3	2
29	*Quercus lobata*	Valley Oak	3+3	15	6	2	3	3	2
30	*Quercus lobata*	Valley Oak	4+5+8	18	12	3	3	3	2
31	*Quercus lobata*	Valley Oak	6+7	25	14	4	3	3	2
32	*Quercus agrifolia*	Coast Live Oak	7+11	25	15	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
33	*Quercus lobata*	Valley Oak	7	20	8	4	3	3	2
34	*Quercus lobata*	Valley Oak	9	18	10	4	3	3	2
35	*Quercus lobata*	Valley Oak	12+18	45	25	3	3	3	2
36	*Quercus agrifolia*	Coast Live Oak	4	12	8	4	3	3	2
37	*Quercus lobata*	Valley Oak	4	8	6	4	3	3	2
38	*Quercus agrifolia*	Coast Live Oak	5	14	10	4	3	3	2
39	*Quercus lobata*	Valley Oak	4+4	16	6	4	3	3	2
40	*Quercus lobata*	Valley Oak	3+4+6	18	8	4	3	3	2
41	*Quercus agrifolia*	Coast Live Oak	6+6+6	30	14	4	3	3	2
42	*Quercus agrifolia*	Coast Live Oak	3+4+6	30	14	4	3	3	2
43	*Quercus agrifolia*	Coast Live Oak	5	12	10	4	3	3	2
44	*Quercus agrifolia*	Coast Live Oak	4	8	8	4	3	3	2
45	*Quercus agrifolia*	Coast Live Oak	8+10	40	16	4	3	3	2
46	*Quercus lobata*	Valley Oak	6	25	12	4	3	3	2
47	*Quercus lobata*	Valley Oak	13	40	18	4	3	3	2
48	*Quercus agrifolia*	Coast Live Oak	13	35	15	4	3	1	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
49	*Quercus lobata*	Valley Oak	26	45	20	4	3	1	1, 6, 7, 8, 9
50	*Quercus agrifolia*	Coast Live Oak	7	20	14	4	3	1	1, 6, 7, 8, 9
51	*Quercus lobata*	Valley Oak	7+8+12+13	40	18	4	2	3	2
52	*Quercus lobata*	Valley Oak	8+12	20	14	4	3	1	1, 6, 7, 8, 9
53	*Quercus lobata*	Valley Oak	16	40	18	4	3	1	1, 6, 7, 8, 9
54	*Quercus agrifolia*	Coast Live Oak	4	10	6	4	3	1	1, 6, 7, 8, 9
55	*Quercus lobata*	Valley Oak	3+4	15	6	4	3	3	2
56	*Quercus agrifolia*	Coast Live Oak	6+8	14	12	4	3	1	1, 6, 7, 8, 9
57	*Quercus lobata*	Valley Oak	1+2+3	12	8	4	3	1	1, 6, 7, 8, 9
58	*Quercus lobata*	Valley Oak	7	14	8	4	3	3	2
59	*Quercus agrifolia*	Coast Live Oak (off site)	14	35	14	4	3	3	2
60	*Quercus lobata*	Valley Oak	12+18	40	18	4	3	3	2
61	*Quercus agrifolia*	Coast Live Oak	4	14	8	4	3	3	2
62	*Pistache chinensis*	Chinese Pistache (off site)	16	45	24	4	3	2	1, 6, 7, 8, 9
63	*Quercus agrifolia*	Coast Live Oak	6+7	14	18	4	3	3	2
64	*Quercus agrifolia*	Coast Live Oak	5	16	10	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
65	*Pyrus calleryana*	Flowering Pear (off site)	9	16	12	4	3	1	1, 6, 7, 8, 9
66	*Quercus lobata*	Valley Oak	12+14	45	18	4	3	3	2
67	*Quercus lobata*	Valley Oak	6+8+8	40	16	4	3	2	1, 6, 7, 8, 9
68	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
69	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
70	*Pyrus calleryana*	Flowering Pear (off site)	8	15	10	4	3	1	1, 6, 7, 8, 9
71	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
72	*Quercus agrifolia*	Coast Live Oak	6+6+6+8+9	30	15	4	3	3	2
73	*Quercus agrifolia*	Coast Live Oak	6+6	12	14	4	3	3	2
74	*Quercus lobata*	Valley Oak	14	40	18	4	3	3	2
75	*no tree #75*	X	X	X	X	X	X	X	X
76	*no tree #76*	X	X	X	X	X	X	X	X
77	*no tree #77*	X	X	X	X	X	X	X	X
78	*Quercus agrifolia*	Coast Live Oak	6+8+12	40	21	4	3	2	1, 6, 7, 8, 9
79	*Quercus lobata*	Valley Oak	5+5	35	12	4	3	2	1, 6, 7, 8, 9
80	*Ficus carica*	Fig	multiple	12	12	4	3	2	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
81	*Quercus kelloggii*	Black Oak (off site)	12+13+13	40	21	4	3	1	1, 6, 7, 8, 9
82	*Quercus lobata*	Valley Oak	7	21	8	2	3	1	1, 6, 7, 8, 9
83	*Quercus agrifolia*	Coast Live Oak	7+4	30	12	4	3	3	2
84	*Quercus lobata*	Valley Oak	32	45	30	4	3	3	2
85	*Quercus agrifolia*	Coast Live Oak	5+5+14	30	18	4	3	3	2
86	*Quercus agrifolia*	Coast Live Oak (off site)	±20	40	25	4	3	1	1, 6, 7, 8, 9
87	*Quercus agrifolia*	Coast Live Oak (off site)	±15	40	20	4	3	1	1, 6, 7, 8, 9
88	*Quercus lobata*	Valley Oak	13	40	18	3	3	3	2
89	*Laurus nobilis*	Grecian Laurel	multiple	16	8	4	3	3	2
90	*Quercus lobata*	Valley Oak	5	30	8	3	3	3	2
91	*Quercus agrifolia*	Coast Live Oak	5+12+12	30	15	4	3	3	2
92	*Quercus lobata*	Valley Oak	12	40	18	4	3	3	2
93	*Ligustrum lucidum*	Glossy Privet	3	14	8	4	3	3	2
94	*Quercus agrifolia*	Coast Live Oak	3+3	16	8	4	3	3	2
95	*Quercus agrifolia*	Coast Live Oak	4	30	14	4	3	3	2
96	*Quercus agrifolia*	Coast Live Oak	4	20	12	4	3	3	2

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART
19320 Sonoma Highway
Sonoma, CA

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured in inches to document its diameter at 54" above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Construction Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible. No protection required.

(2) Removal is required due to significant development impacts.

(3) Removal is required due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean, raise, or clear the canopy, per International Society of Arboriculture pruning standards.

(10) This trunk could be located off site, but the canopy overhangs the project site.

(11) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

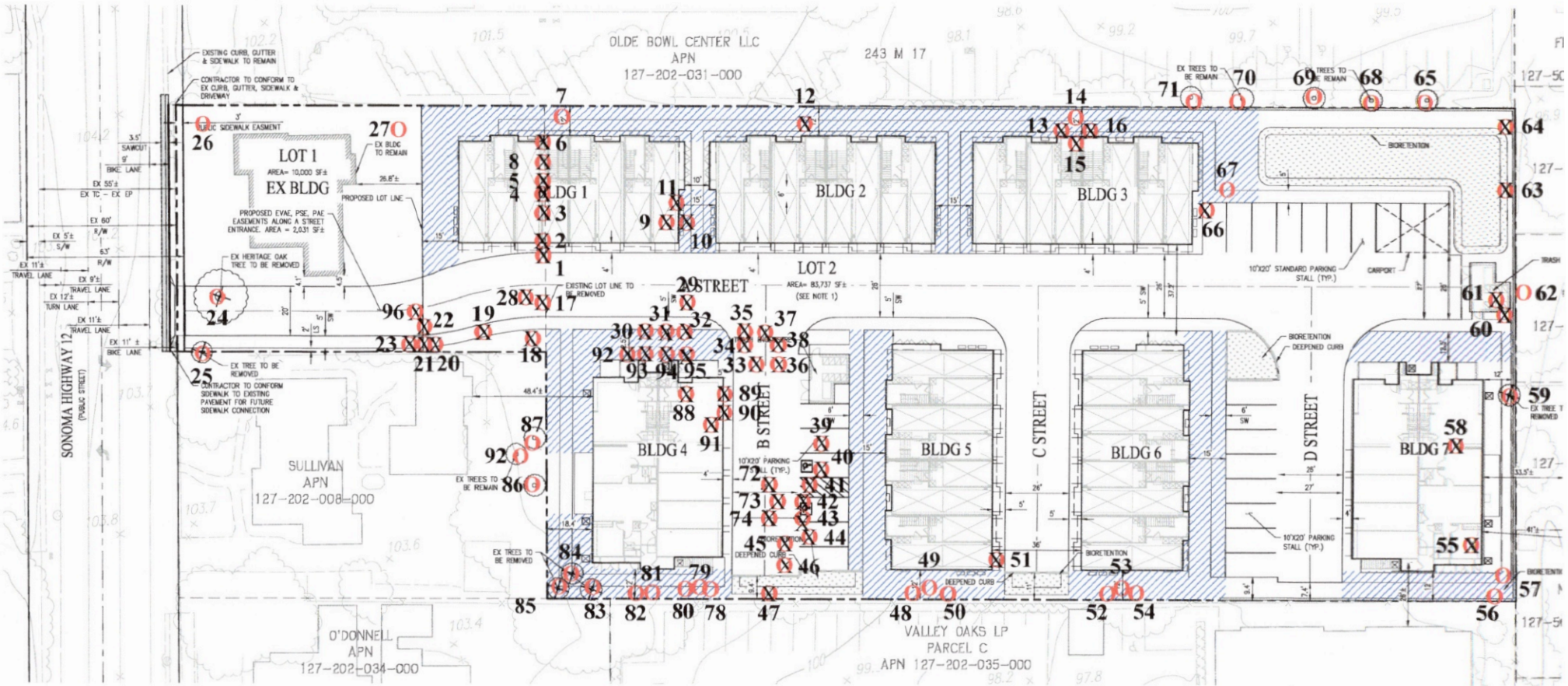
Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether mitigation is required, when, and how.

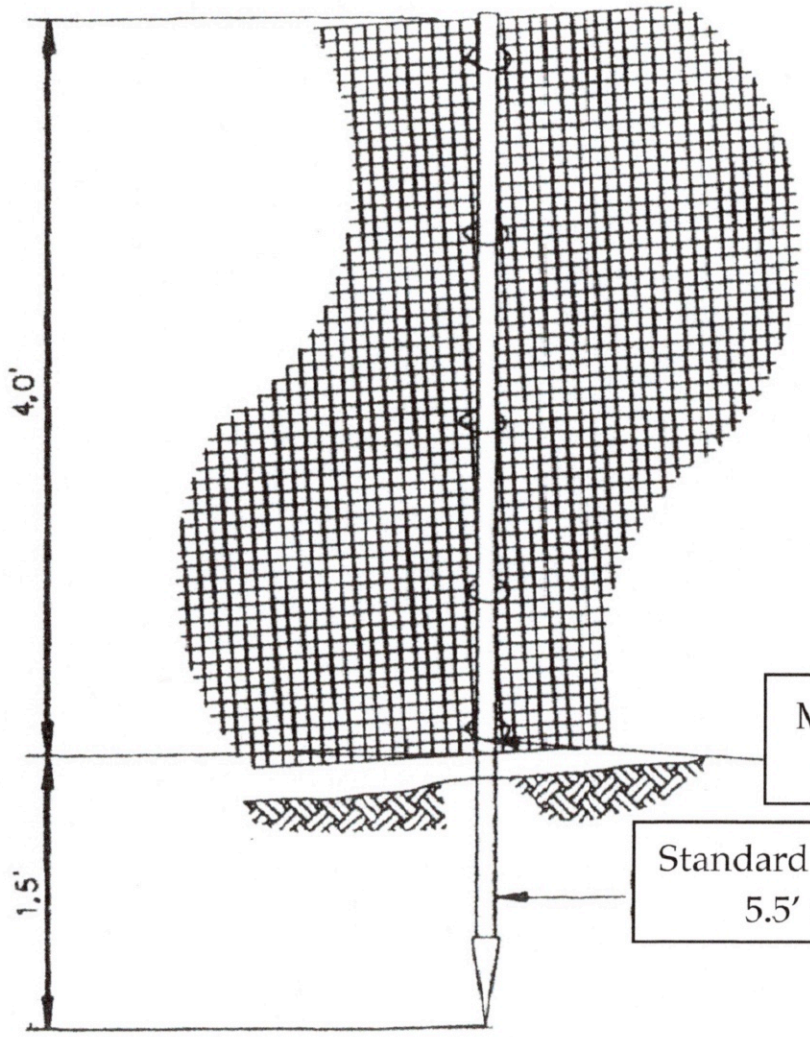
Any excavation within the defined TPZ will require that the tree be monitored on a monthly basis by the project arborist for the duration of construction and for one year beyond completion of construction. Monitoring may determine other mitigation measures that may be required to offset root loss or damage.

TREE LOCATION PLAN



TREE LOCATION AND NUMBERING PLAN
19320 Sonoma Highway
Sonoma, CA

TREE FENCING DETAIL



NOTE
Metal Wire Tree Protection Fencing

Minimum 4-ft high steel welded wire fencing with mesh size 2-in x 4-in, or arborist approved wire fence substitute. Cut and shape as needed for sloping terrain

Metal tie wire, flip tie, or equivalent, 5 per post

Standard farm quality metal 'T' post, 5.5' tall, placed 8' on center

METAL WIRE TREE PROTECTION FENCING

TREE PRESERVATION GUIDELINES

TREE PRESERVATION GUIDELINES

19320 Sonoma Highway
Sonoma, CA

INTRODUCTION

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at this site require specialized protection techniques during all construction activities to minimize negative impact on their long term health and vigor. The area immediately beneath and around canopy driplines is especially critical, and the specifications that follow are established to protect short and long term tree integrity. The purpose of this specification is therefore to define the procedures that must be followed during any and all phases of development in the immediate vicinity of designated protected trees.

Established, mature trees respond in a number of different ways to the disruption of their natural conditions. Change of grade within the root system area or near the root collar, damage to the bark of the trunk, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual impacts of these activities may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the decline process takes many years, with symptoms appearing slowly and over a period of time. Trees may not begin to show obvious signs of decline from the negative impacts of construction until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long-term health of all protected trees that a defined protection program be established before beginning any construction activity where protected trees are found. Once incorporated at the design level, it is mandatory that developers, contractors, and construction personnel understand the critical importance of these guidelines, and the potential penalties that will be levied if they are not fully incorporated at every stage of development.

The following specifications are meant to be utilized by project managers and those supervising any construction in the vicinity of protected trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. Questions which arise, or interpretation of specifications as they apply to specific site activities, must be referred to the project arborist as they occur.

Horticultural Associates
P.O. Box 1261
Glen Ellen, CA 95442
707-935-3911

TREE PROTECTION ZONE

1. The canopy dripline is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing.

2. No encroachment into the dripline is allowed at any time without approval from the project arborist, and unauthorized entry may be subject to civil action and penalties.

3. The dripline will be designated by the project arborist at a location determined to be adequate to ensure long term tree viability and health. This is to occur prior to installation of fencing and in conjunction with the fencing contractor

TREE PROTECTION FENCING

1. Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing shall be installed at each site tree, or group of trees. Fencing shall be located at the dripline designated by the project arborist and generally illustrated on the Improvement Plans.

2. Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable, however.

3. Fencing shall be installed tightly between steel fence posts (standard quality farm 'T' posts work well) placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties, metal tie wire, or flip ties. See attached fencing detail.

4. Fencing shall serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.

5. All encroachment into the fenced dripline must be approved and supervised by the project arborist. Approved dripline encroachment may require additional mitigation or protection measures that will be determined by the project arborist at the time of the request.

6. Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

7. Fencing shall be upright and functional at all times from start to completion of project. Fencing shall remain in place and not be moved or removed until all construction activities at the site are completed.

TREE PRUNING AND TREATMENTS

1. All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.

2. All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur by, or under the direct supervision of, an arborist certified by the International Society of Arboriculture.

GRADING AND TRENCHING

1. Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non conformance may generate stop-work orders.

2. The designated dripline is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

3. Trenching should be routed around the dripline. Where trenching has been designated within the dripline, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

4. All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or during any grading activity. The tearing of roots by equipment shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

5. Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

6. Retaining walls are effective at holding grade changes outside the area of the dripline and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within a dripline.

7. Grade changes outside the dripline, or those necessary in conjunction with retaining walls, shall be designed so that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

8. Grade reduction within the designated dripline shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

9. Foundations of all types within the dripline shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures. Building footprints should generally be outside the dripline whenever possible.

DRAINAGE

The location and density of native trees may be directly associated with the presence of naturally occurring water, especially ephemeral waterways. Project design, especially drainage components, should take into consideration that these trees may begin a slow decline if this naturally present association with water is changed or eliminated.

TREE DAMAGE

1. Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

2. Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected.

3. Any tree that is significantly damaged and whose survivability is threatened, due to negligence by any contractor, shall be appraised using the Trunk Formula Method provided in the 9th Edition of the Guide For Plant Appraisal. This appraisal value will be the basis for any fines levied on the offending contractor.

MULCHING

1. Trees will benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the Tree Protection Zone. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, dyed bark, or chipped lumber will not function as beneficially. All trees that are expected to be

impacted in any way by project activities shall have mulch placed prior to the installation of protection fencing.

2. Mulch should be generated from existing site trees that are removed or pruned as part of the project. Much brought onto the site from an outside source must be from trees that are verified to be free of the Sudden Oak Death pathogen *Phytophtora ramorum*.

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ISA TREE PRUNING STANDARDS

WESTERN CHAPTER

ISA

PRUNING STANDARDS

Purpose:

Trees and other woody plants respond in specific and predictable ways to pruning and other maintenance practices. Careful study of these responses has led to pruning practices which best preserve and enhance the beauty, structural integrity, and functional value of trees.

In an effort to promote practices which encourage the preservation of tree structure and health, the W.C. ISA Certification Committee has established the following Standards of Pruning for Certified Arborists. The Standards are presented as working guidelines, recognizing that trees are individually unique in form and structure, and that their pruning needs may not always fit strict rules. The Certified Arborist must take responsibility for special pruning practices that vary greatly from these Standards.

I. Pruning Techniques

A. A thinning cut removes a branch at its point of attachment or shortens it to a lateral large enough to assume the terminal role. Thinning opens up a tree, reduces weight on heavy limbs, can reduce a tree's height, distributes ensuing invigoration throughout a tree and helps retain the tree's natural shape. Thinning cuts are therefore preferred in tree pruning.

When shortening a branch or leader, the lateral to which it is cut should be at least one-half the diameter of the cut being made. Removal of a branch or leader back to a sufficiently large lateral is often called "drop crotching."

B. A heading cut removes a branch to a stub, a bud or a lateral branch not large enough to assume the terminal role. Heading cuts should seldom be used because vigorous, weakly attached upright sprouts are forced just below such cuts, and the tree's natural form is altered. In some situations, branch stubs die or produce only weak sprouts.

C. When removing a live branch, pruning cuts should be made in branch tissue just outside the branch bark ridge and collar, which are trunk tissue. *(Figure 1)* If no collar is visible, the angle of the cut should approximate the angle formed by the branch bark ridge and the trunk. *(Figure 2)*

D. When removing a dead branch, the final cut should be made outside the collar of live callus tissue. If the collar has grown out along the branch stub, only the dead stub should be removed, the live collar should remain intact, and uninjured. *(Figure 3)*

E. When reducing the length of a branch or the height of a leader, the final cut should be made just beyond (without violating) the branch bark ridge of the branch being cut to. The cut should approximately bisect the angle formed by the branch bark ridge and an imaginary line perpendicular to the trunk or branch cut. *(Figure 4)*

F. A goal of structural pruning is to maintain the size of lateral branches to less than three-fourths the diameter of the parent branch or trunk. If the branch is codominant or close to the size of the parent branch, thin the branch's foliage by 15% to 25%, particularly near the terminal. Thin the parent branch less, if at all. This will allow the parent branch to grow at a faster rate, will reduce the weight of the lateral branch, slow its total growth, and develop a stronger branch attachment. If this does not appear appropriate, the branch should be completely removed or shortened to a large lateral. *(Figure 5)*

G. On large-growing trees, except whorl-branching conifers, branches that are more than one-third the diameter of the trunk should be spaced along the trunk at least 18 inches apart, on center. If this is not possible because of the present size of the tree, such branches should have their foliage thinned 15% to 25%, particularly near their terminals. *(Figure 6)*

H. Pruning cuts should be clean and smooth with the bark at the edge of the cut firmly attached to the wood.

I. Large or heavy branches that cannot be thrown clear, should be lowered on ropes to prevent injury to the tree or other property.

J. Wound dressings and tree paints have not been shown to be effective in preventing or reducing decay. They are therefore not recommended for routine use when pruning.

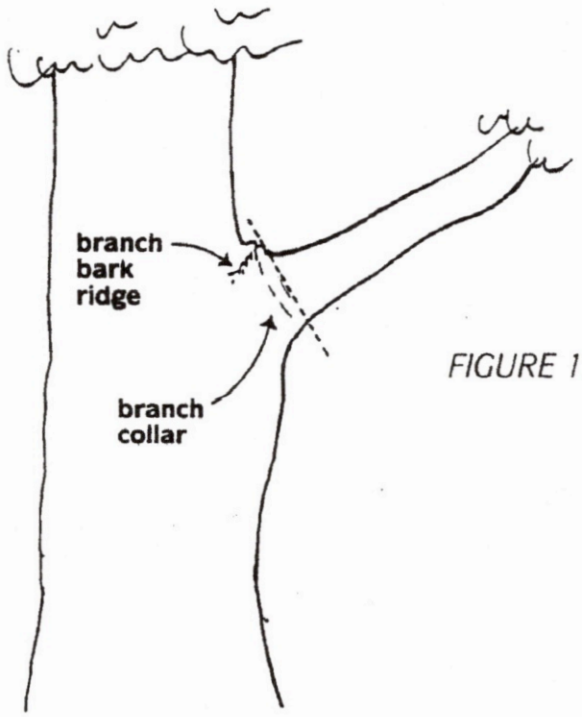

FIGURE 1. When removing a branch, the final cut should be just outside the branch bark ridge and collar.

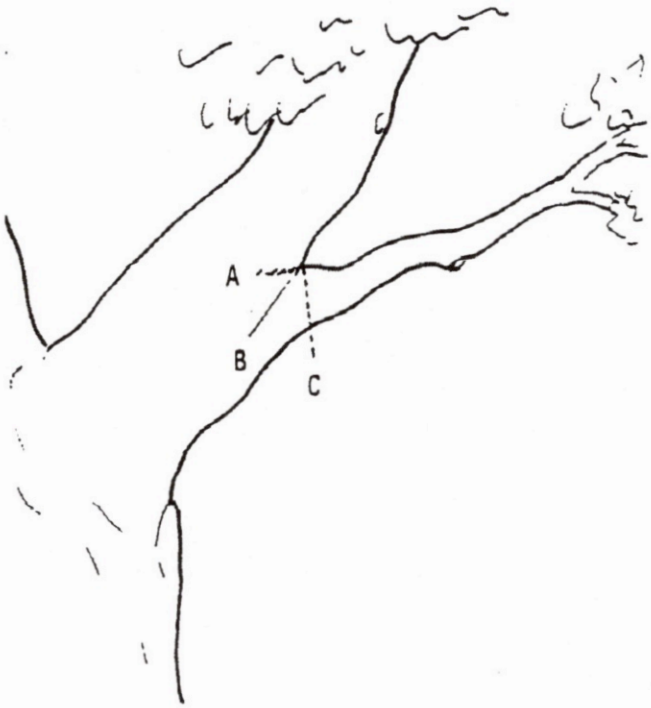

FIGURE 2. In removing a limb without a branch collar, the angle of the final cut to the branch bark ridge should approximate the angle the branch bark ridge forms with the limb. Angle AB should equal Angle BC.

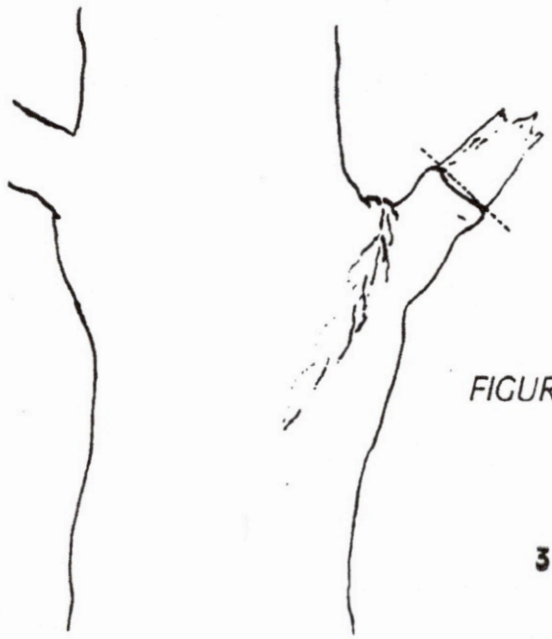

FIGURE 3. When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.

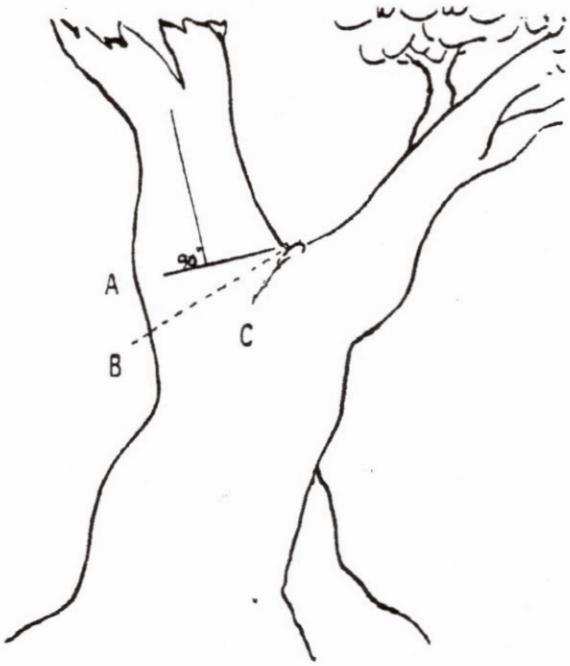

FIGURE 4. *In removing the end of a limb to a large lateral branch, the final cut is made along a line that bisects the angle between the branch bark ridge and a line perpendicular to the limb being removed. Angle AB is equal to Angle BC.*

FIGURE 5. *A tree with limbs tending to be equal-sized, or codominant. Limbs marked B are greater than ¾ the size of the parent limb A. Thin the foliage of branch B more than branch A to slow its growth and develop a stronger branch attachment.*

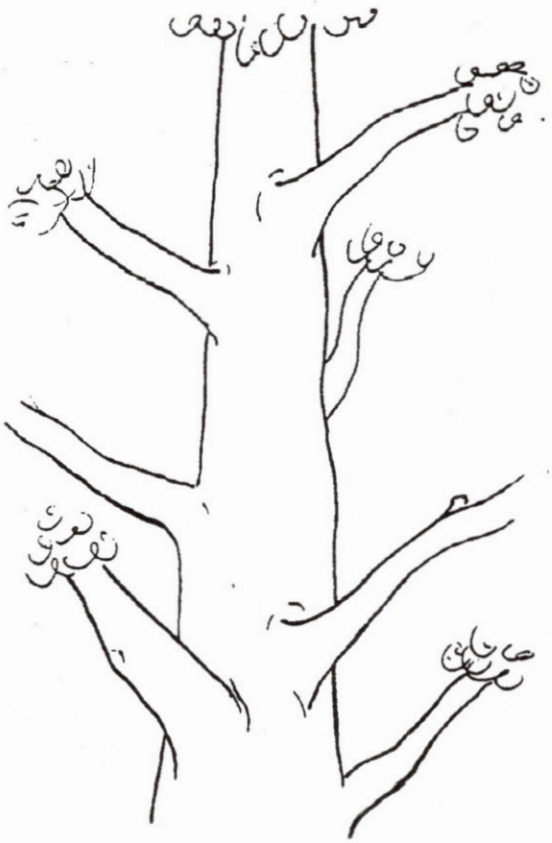

FIGURE 6. *Major branches should be well spaced both along and around the stem.*

II. Types of Pruning — Mature Trees

A. CROWN CLEANING

Crown cleaning or cleaning out is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches and watersprouts from a tree crown.

B. CROWN THINNING

Crown thinning includes crown cleaning and the selective removal of branches to increase light penetration and air movement into the crown. Increased light and air stimulates and maintains interior foliage, which in turn improves branch taper and strength. Thinning reduces the wind-sail effect of the crown and the weight of heavy limbs. Thinning the crown can emphasize the structural beauty of trunk and branches as well as improve the growth of plants beneath the tree by increasing light penetration. When thinning the crown of mature trees, seldom should more than one-third of the live foliage be removed.

At least one-half of the foliage should be on branches that arise in the lower two-thirds of the trees. Likewise, when thinning laterals from a limb, an effort should be made to retain inner lateral branches and leave the same distribution of foliage along the branch. Trees and branches so pruned will have stress more evenly distributed throughout the tree or along a branch.

An effect known as "lion's-tailing" results from pruning out the inside lateral branches. Lion's-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water-sprouts, weakened branch structure and limb breakage.

C. CROWN REDUCTION

Crown reduction is used to reduce the height and/or spread of a tree. Thinning cuts are most effective in maintaining the structural integrity and natural form of a tree and in delaying the time when it will need to be pruned again. The lateral to which a branch or trunk is cut should be at least one-half the diameter of the cut being made.

D. CROWN RESTORATION

Crown restoration can improve the structure and appearance of trees that have been topped or severely pruned using heading cuts. One to three sprouts on main branch stubs should be selected to reform a more natural appearing crown. Selected vigorous sprouts may need to be thinned to a lateral, or even headed, to control length growth in order to ensure adequate attachment for the size of the sprout. Restoration may require several prunings over a number of years.

II. Types of Pruning — Mature Trees *(continued)*

E. CROWN RAISING

Crown raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas. It is important that a tree have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within a tree.

When pruning for view, it is preferable to develop "windows" through the foliage of the tree, rather than to severely raise or reduce the crown.

III. Size of Pruning Cuts

Each of the Pruning Techniques (Section I) and Types of Pruning (Section II) can be done to different levels of detail or refinement. The removal of many small branches rather than a few large branches will require more time, but will produce a less-pruned appearance, will force fewer watersprouts and will help to maintain the vitality and structure of the tree. Designating the maximum size (base diameter) that any occasional undesirable branch may be left within the tree crown, such as ½", 1" or 2" branch diameter, will establish the degree of pruning desired.

IV. Climbing Techniques

A. Climbing and pruning practices should not injure the tree except for the pruning cuts.

B. Climbing spurs or gaffs should not be used when pruning a tree, unless the branches are more than throw-line distance apart. In such cases, the spurs should be removed once the climber is tied in.

C. Spurs may be used to reach an injured climber and when removing a tree.

D. Rope injury to thin barked trees from loading out heavy limbs should be avoided by installing a block in the tree to carry the load. This technique may also be used to reduce injury to a crotch from the climber's line.

APPENDIX E-2

Biological Resources Analysis

BIOLOGICAL RESOURCES ANALYSIS
MONTALDO APARTMENTS PROJECT
SONOMA, CALIFORNIA

September 12, 2023

Prepared for

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Prepared by

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TABLE OF CONTENTS

FIGURES
(At Back of Report)

TABLES
(At Back of Report)

ATTACHMENTS
(At Back of Report)

1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this Biological Resources Analysis for the proposed Montaldo Apartments Project located at 19320 Sonoma Highway in Sonoma, California (the project site) (Figures 1 and 2). The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify potentially significant impacts that could occur to sensitive biological resources from the construction of a proposed 64 unit residential apartment complex development (the project).

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society. Biological resources also include waters of the United States (U.S.) and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and CDFW. It is important to note that our analysis includes an assessment of the potential for impacts to regulated waters but does not provide the level of detail required for a formal delineation of "waters of the U.S." suitable for submittal to the Corps, the regulatory agency that defines waters of the U.S.

This Biological Resources Analysis also provides mitigation measures for "potentially significant" and "significant" impacts that could occur to biological resources. Whenever possible, upon implementation, the prescribed mitigation measures would reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code §§ 21000 et seq.; 14 Cal. Code Regs §§ 15000 et seq). Accordingly, this report is suitable for review and inclusion in any review being conducted by the City of Sonoma for the proposed project pursuant to the CEQA.

2. PROPERTY LOCATION AND SETTING

The approximately 2.15-acre proposed project site is located on the east side of Sonoma Highway 12 (Hwy 12) roughly 375 feet south of Ramona Street and 450 feet north of Lyon Street in the City of Sonoma, California. The project site includes two parcels (APNs #127-202-006 and 127-202-007) and currently includes one main house built in 1939, with a landscaped lawn and paved driveway off of Hwy 12 in the front, a small, paved area directly behind the house with a small storage shed, and a roughly 1.5-acre ruderal, herbaceous field east of the paved lot behind the house and completely surrounded by a roughly 8-feet tall wooden fence. The project site is surrounded on all sides by high-density urban development. West of the project site is Hwy 12 with commercial businesses across the highway, an office park adjacent to the north of the site, and high-density residential neighborhoods to the south and east of the property.

3. PROPOSED PROJECT

The proposed project includes removal of the existing home which is in a state of disrepair and to develop the entire 2.15-acre project site by constructing a 64-unit residential apartment complex consisting of 8 apartment buildings, a private driveway accessing all buildings off Hwy

12, tenant parking, trash enclosures, bioretention facilities, and associated utilities (Attachment A).

4. ANALYSIS METHODS

Prior to preparing this biological resources analysis report, M&A researched the most recent version of CDFW's Natural Diversity Database (CNDDB) (RareFind 6 application) (CNDDB 2023). The CNDDB is a database maintained by the CDFW that provides historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare species) known from the state of California. M&A also searched the 2023 electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2001) for records of special-status plants known in the region of the project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within an area of affect. Additionally, M&A reviewed the Biological Technical Memorandum prepared by Analytical Environmental Services on behalf of DeNova Homes dated June 6, 2021. This report documented the results of the biological resources survey of the project site conducted by Analytical Environmental Services on June 3, 2021.

M&A biologist Mr. Mark Jasper conducted a general survey of the project site on June 20, 2023, to record biological resources and to assess the likelihood of resource agency regulated areas on the project site. The survey involved searching all habitats on the site and recording all plant and wildlife species observed. M&A cross-referenced the habitats found on the project site against the habitat requirements of local or regionally known special-status species to determine if the proposed project could directly or indirectly impact such species.

M&A's site evaluation included a cursory examination of the site to determine if there could be potential areas within the project site that would be regulated as waters of the U.S. and/or State (the level of analyses was not sufficient for a preliminary wetlands investigation report suitable for submittal to the Corps). The results of our literature research and field reconnaissance are provided in the sections below.

5. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

5.1 Topography and Hydrology

The project site is almost completely flat with onsite elevations ranging between 95 to 112 feet above mean sea level. There are no aquatic resources of any kind on the project site. No drainages, scour, swales, or any other hydrological indicators of any kind were observed onsite during the June 2023 site survey.

5.2 Plant Communities and Associated Wildlife Habitats

A complete list of plant species observed on the project site is presented in Table 1. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html). Table 2 is a list of wildlife species observed on the project site. Nomenclature for wildlife follows the CDFW's *Complete List of Amphibian,*

Reptile, Bird, and Mammal Species in California (2016) and any changes made to species nomenclature as published in scientific journals since the publication of the CDFW's list.

Two plant communities were observed onsite: anthropogenic and ruderal herbaceous.

5.2.1 ANTHROPOGENIC

Communities dominated by plants introduced by people and established or maintained by human disturbance are "anthropogenic communities." Some of these are entirely artificial communities such as cultivated row crops, lawns, vineyards, etc. Others are assemblages of weedy species that have invaded disturbed areas, sometimes in spite of human efforts to control them (Holland and Keil 1989 & 1995).

Often around commercial and residential developments, plant species that are not native to the region have been introduced and later become naturalized (the urban mix), often spreading aggressively, and reducing local species diversity. In these areas, it is not uncommon to find mixtures of non-native and native vegetation in open areas. On the project site, the unpaved area surrounding the main house is dominated by a partially overgrown grassy lawn in the front along Hwy 12 with ornamental trees, shrubs, and herbs to the north and south of the lawn. Ornamental species observed onsite by the main house and along the driveway to the back of the house include myrtle (*Myrtus communis*), Lily of the Nile (*Agapanthus africanus*), glossy privet (*Ligustrum lucidum*), rosemary (*Rosmarinus officinalis*), and loquat (*Eriobotrya japonica*).

Typically, anthropogenic influenced communities provide habitat for those animal species adapted to humans and human-induced disturbances. Examples of animals observed onsite that are associated with these communities are California scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*) and Northern mockingbird (*Mimus polyglottos*).

5.2.2 RUDERAL HERBACEOUS

The majority of the project site is the large field east of the paved lot behind the main house. This field is dominated by ruderal, herbaceous species with a few scattered oak trees and a mix of oaks and ornamentals along the wooden fence surrounding the north, east, and south project site boundaries. This ruderal herbaceous field supports highly compacted soils. Dominant grass and forb species within this habitat are non-native species such as wild oat (*Avena fatua*), carrot (*Daucus carota*), hare barley (*Hordeum murinum* ssp. *leporinum*), and ripgut brome (*Bromus diandrus*). Subdominants within this community include soft chess (*Bromus hordeaceus*), English plantain (*Plantago lanceolata*), California poppy (*Eschscholzia californica*), hairy cat's ear (*Hypochaeris radicata*), and wild radish (*Raphanus sativus*). Along the margins of the ruderal herbaceous field are various trees and forb species dominated by ornamental trees, coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), black oak (*Quercus kelloggii*), giant reed grass (*Arundo donax*), and Himalayan blackberry (*Rubus armeniacus*). Although there were a significant number of oaks and other trees within the study area, the canopy in this habitat was not continuous and was dominated by the ruderal herbaceous vegetation layer.

Ruderal habitats typically provide suitable environments for common animals that are adapted to living in association with humans. Common wildlife species associated with ruderal communities include raccoon (*Procyon lotor*), Botta's pocket gopher, black-tailed jackrabbit (*Lepus californicus*), western fence lizard (*Sceloporus occidentalis*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and house finch (*Haemorhous mexicanus*).

5.3 Wildlife Corridors

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions: 1) they provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur; 2) populations can move in response to environmental changes and natural disasters; and 3) individuals can recolonize habitats from which populations have been locally extirpated (Beier and Loe 1992). All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

The proposed project will not interfere with the movement of native wildlife. The project site has no aquatic features such as a stream or river that would serve as a wildlife movement corridor and the site has been confined with high restrictive fencing. Finally, the site is surrounded on all sides by high-density urban commercial and residential development. This project is truly an urban infill development and development of this project site within the boundaries of the existing fence lines should not impact wildlife movement.

6. SPECIAL STATUS SPECIES

6.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq*.; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);

- plants and animals that meet the definition of endangered, rare, or threatened under the CEQA (14 CCR §15380) that may include species not found on either CESA or FESA lists;

- plants occurring on Ranks 1A, 1B, 2A, 2B, 3, and 4 of the CNPS' electronic *Inventory* (CNPS 2001). The CDFW recognizes that Ranks 1A, 1B, 2A and 2B of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and the CDFW requests their inclusion in EIRs. Plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information (more on CNPS Rank species below);

- migratory nongame birds of management concern listed by the USFWS (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);

- animals that are designated as "species of special concern" by the CDFW (April 2023);

- animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

- bat species that are designated on the Western Bat Working Group's (WBWG) Regional Bat Species Priority Matrix as: "RED OR HIGH." This priority is justified by the WBWG as follows: "Based on available information on distribution, status, ecology, and known threats, this designation should result in these bat species being considered the highest priority for funding, planning, and conservation actions. Information about status and threats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment."

In the paragraphs below we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

Federal Endangered or Threatened Species. A species listed as endangered or threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a federally listed endangered or threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

State Threatened Species. A species listed as threatened under the CESA (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a State-listed threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the CDFW prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS Rank Species. The CNPS maintains an "Inventory" of special-status plant species. This inventory has four lists of plants with varying rarity. These lists are: Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also State or federally listed species), the CDFW requests the inclusion of Rank 1 species in environmental documents. In addition, other State and local agencies may request the inclusion of species on other lists as well. The Rank 1 and 2 species are defined below:

- Rank 1A: Presumed extinct in California;
- Rank 1B: Rare, threatened, or endangered in California and elsewhere;
- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.

All of the plants constituting Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (CESA) of the Fish and Game Code and are eligible for State listing (CNPS 2001). Rank 2 species are rare in California, but more common elsewhere. Ranks 3 and 4 contain species about which there is some concern and are reviewed by the CDFW and maintained on "watch lists."

Additionally, in 2006, the CNPS updated their lists to include "threat code extensions" for each list. For example, Rank 1B species would now be categorized as Rank 1B.1, Rank 1B.2, or Rank 1B.3. These threat codes are defined as follows:

- .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)";
- .2 is "fairly endangered in California (20-80% of occurrences threatened)";
- .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS Rank 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to Rank 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the White-tailed Kite (*Elanus leucurus*) and Golden Eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

6.2 Potential Special-Status Plants on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status plants within 5 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status plants have been mapped on or adjacent the project site. However, according to the CNPS' *Inventory* and the CDFW's CNDDB, a total of nine special-status plant species are known to occur in the region of the project site (Table 3). Most of these plants occur in specialized habitats such as chaparral and coastal scrub, broadleaf forest, serpentine grassland, and vernal pools. Additionally, owing to the excessively disturbed and unnatural conditions found at the project site, special-status plants would not likely occur onsite. The project site could provide marginally suitable habitat for one special status plant species: congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*) and as such it is discussed below.

6.2.1 CONGESTED-HEADED HAYFIELD TARPLANT

Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*) (formerly *H. c. leucocephala*) is a CNPS Rank 1B.2 species. It has no state or federal status. This annual member of the sunflower family is found in valley and foothill grassland, and sometimes on roadsides. The bracts of this subspecies of the *Hemizonia congesta* are densely long and hairy and the hairs impart a somewhat silvery appearance to the heads, which are generally clustered. Congested-headed hayfield tarplant blooms between April and November. It is threatened by agriculture and development, including road construction.

The closest CNDDB occurrence of this species is from a 1990 collection taken from a grassy pasture on Dutra Ranch roughly 0.6 mile west of the project site. This species was not observed onsite during M&A's appropriately timed June 20, 2023, site visit (during this species' blooming period) nor was it observed during the June 3, 2021, survey of the site by Analytical Environmental Services. Though 2021 was a drought year, 2023 was a normal rainfall year. Given that this species was not observed onsite during appropriately timed surveys conducted in drought and normal rainfall years, we conclude that this species is not present on the project site and no impacts to this species from the proposed project are anticipated.

Therefore***, impacts to congested-headed hayfield tarplant would not be regarded as significant pursuant to the CEQA. No mitigation should be required for this species.***

6.3 Potential Special-Status Animals on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status species within 5 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status animal records have ever been mapped on or adjacent to the project site. However, a total of nine special-status animal species are known to occur in the region of the project site (Table 4). Of these nine species, only three species have any possibility of occurring on the project site: pallid bat and two bumble bee species, Crotch's bumble bee (*Bombus crotchii*) and Western bumble bee (*Bombus occidentalis*).

On June 12, 2019, the California Fish and Game Commission (Commission) voted to accept a petition from the Xerces Society to consider listing four subspecies of bumble bee under CESA,

two of which have current ranges that include the project site: Crotch's bumble bee (*Bombus crotchii*) and Western bumble bee (*Bombus occidentalis*). A court decision determined that the Commission has the authority to list insects. As such, candidacy was established for these bumble bee species on September 30, 2022. As candidate species, these bumble bees receive the same legal protection afforded to CESA endangered or threatened species (Fish and Game Code, §§ 2074.2 & 2085). These species are discussed below.

6.3.1 CROTCH'S BUMBLEBEE

The range of Crotch's bumble bee historically extended throughout the southern two-thirds of California, from coastal California east to the Sierra-Cascade crest and south into Mexico, but recent data indicates that this species is absent from the center of its historical range due to extensive agricultural intensification and urbanization (Xerces Society 2023).

In California, Crotch's bumble bees inhabit open grassland and scrub habitats. Suitable habitat is based on the availability of flowers on which to forage throughout the duration of the colony (spring through fall), colony nest sites, and overwintering sites for the queens. Bumble bees are generalist foragers (i.e., they do not depend on any one flower type). Crotch's bumble bees, like most bumble bee species, nest underground (e.g., in abandoned rodent holes). The flight period for Crotch's bumble bee queens is from late February to late October, peaking in early April and again in July. The flight period for workers and males extends between late March and September (Xerces Society 2023).

The closest CNDDB record for this species is from 1910 and is located approximately 3 miles north of the project site (Occurrence #10). Though no rodents or rodent burrows were observed during the June 2023 site survey, the ruderal herbaceous field behind the main house on the project site could provide marginally suitable habitat for this species. California poppy (*Eschscholzia californica*) was observed within this field and is a nectar/pollen source for this species. Although Crotch's bumblebee is unlikely to occur on the project site, this species cannot be entirely discounted without preconstruction surveys to rule out its presence. Therefore***, impacts to Crotch's bumblebee are regarded as potentially significant pursuant to the CEQA.*** Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA.

6.3.2 WESTERN BUMBLEBEE

The western bumble bee feeds upon nectar and pollen from a variety of plants species but is most adapted to native plant species. It nests in abandoned rodent burrows and bird nests. The flight period in California is from early February to late November, peaking in late June and late September. The flight period for workers and males is from early April to early November. Little is known about sites where queens overwinter, but it is likely in underground areas protected from temperature extremes and flooding during winter rains.

The closest CNDDB record for this species is from 1958 and is located approximately 0.5 mile south of the project site (Occurrence #170). Though no rodents or rodent burrows were observed during the June 2023 site survey, the ruderal herbaceous field behind the main house on the project site could provide marginally suitable habitat for this species. Although it is unlikely to occur on the project site, this species cannot be entirely discounted without preconstruction

surveys to rule out its presence. Therefore***, impacts to Western bumblebee are regarded as potentially significant pursuant to the CEQA.*** Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA.

6.3.3 PALLID BAT

The pallid bat (*Antrozous pallidus*) is a California "species of special concern." It has no federal status. The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare" pursuant to the California Environmental Quality Act (CEQA) (14 CCR §15380(2)(A)). As such, potential impacts to this bat species should be considered during any CEQA review. Any unmitigated impacts to this species would likely be regarded as a significant adverse impact pursuant to CEQA (§21068).

This bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern Counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County. It occurs in a wide variety of habitats. It is most common in open, dry habitats with rocky areas for roosting. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Roost must protect bats from high temperatures. Night roosts may be in more open sites such as porches and open buildings. Pallid bat is a social species that roosts in groups of 20 or more.

The closest known CNDDB record for the pallid bat to the project site is from 1999 and is located approximately 0.3 mile to the southwest (CNDDB Occurrence No. 59). This occurrence documents an observation of a night roost with pallid bat fecal pellets and prey remains under a bridge over Sonoma Creek along Highway 12. The main house on the project site has been abandoned and in a state of disrepair for almost a year and there are several trees onsite with hollows large enough to be used as roosting sites for this species. As abandoned buildings and trees on the project site provide suitable roosting habitat for this species, impacts to pallid bat cannot be ruled out. Therefore***, impacts to pallid bat are regarded as potentially significant pursuant to the CEQA.*** Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. See the Impacts and Mitigations Section for details.

7. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law its relevance to the proposed project is discussed.

7.1 Federal Endangered Species Act

The FESA forms the basis for the federal protection of threatened or endangered plants, insects, fish, and wildlife. FESA contains four main elements, they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit (ITP) through approval of a Habitat Conservation Plan (HCP).

In the case of saltwater fish and other marine organisms, the requirements of FESA are enforced by the NMFS. The USFWS enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A December 2001 decision by the 9th Circuit Court of Appeals (Arizona Cattle Growers' Association, Jeff Menges, vs. the U.S. Fish and Wildlife Service and Bureau of Land Management, and the Southwest Center for Biological Diversity) ruled that the USFWS must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the USFWS can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is "reasonably certain to occur."

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species (other than a plant species) is necessary to complete an otherwise lawful activity, this triggers the need to obtain an ITP either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency such as the Corps), or through Section 10 of FESA which requires preparation of an HCP (for State and local agencies, or individuals, and projects without a federal "nexus"; for example, projects that do not need a Corps permit).

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the

geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process only applies to actions taken by federal agencies that are considering authorizing discretionary projects. Section 7 is by and between the NMFS and/or the USFWS and the federal agency contemplating a discretionary approval (that is, the federal "action agency," for example, the Corps or the Federal Highway Administration). Private parties, cities, counties, etc. (i.e., applicants) may participate in the Section 7 consultation *at the discretion of the federal agencies conducting the Section 7 consultation*. The Section 7 consultation process is triggered by a determination of the "action agency" – that is, the federal agency that is carrying out, funding, or approving a project - that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation between the nexus agency and the USFWS/NMFS is required. As part of the formal consultation, the USFWS/NMFS may resolve any issues informally with the nexus agency or may prepare a formal Biological Opinion assessing whether the proposed action would be likely to result in "jeopardy" to a listed species or if it could adversely modify designated critical habitat. If the USFWS/NMFS prepares a Biological Opinion, it will contain either a "jeopardy" or "non-jeopardy" decision. If the USFWS/NMFS concludes that a proposed project would result in adverse modification of critical habitat or would jeopardize the continued existence of a federally listed species (that is, it will issue a jeopardy decision), the nexus federal agency would be most unlikely to authorize its discretionary permit. If the USFWS/NMFS prepares a "non-jeopardy" Biological Opinion, the nexus federal agency may authorize the discretionary permit making all conditions of the Biological Opinion conditions of its discretionary permit. A non-jeopardy Biological Opinion constitutes an "incidental take" permit that allows applicants to "take" federally listed species while otherwise carrying out legally sanctioned projects.

For non-federal entities, for example private parties, cities, and counties that are proposing a project that might result in incidental take, Section 10 provides the mechanism for obtaining that take authorization. Under Section 10 of FESA, for the applicant to obtain an ITP, the applicant is required to submit a "conservation plan" to the USFWS or NMFS that specifies the impacts that are likely to result to federally listed species, and the measures the applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by the USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an ITP can be issued.

7.1.1 Responsible Agency

FESA gives regulatory authority to the USFWS for federally listed terrestrial species and non-anadromous fish. The NMFS has regulatory authority over federally listed marine mammals and anadromous fish.

7.1.2 Applicability to the Proposed Project

There are no federally listed species expected to occur on the project site. The project site does not provide suitable habitat for any federally listed terrestrial species and does not provide

fisheries habitat as there are no aquatic resources onsite. There is no critical habitat mapped within 5 miles of the project site. No impacts to dispersing or migrating federally listed animals or their habitats are expected. Finally, this landscaped, residential project site does not provide suitable habitat for federally listed plants. No impacts to federally listed species are expected from project implementation.

7.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

7.2.1 Applicability to The Proposed Project

Though unlikely due to the high level of disturbance on the project site and the surrounding high-density commercial/residential area, urban adapted songbirds could nest on the project site and raptors could nest in tall trees in the surrounding area. These songbirds and raptors (birds of prey) would be protected by the Migratory Bird Treaty Act. As long as there is no direct mortality of species protected pursuant to this Act caused by development of the site, there should be no constraints to development. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds were nesting. Upon completion of nesting, the project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring species in the Impacts and Mitigations section below.

7.3 California Endangered Species Act

7.3.1 Section 2081 of the California Endangered Species Act

In 1984, the State legislated the CESA (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFW considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If the CDFW determines that a proposed project could impact a State-listed threatened or endangered species, the CDFW will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from the CDFW and/or USFWS (if it is a federally listed species) prior to allowing/permitting impacts to such species.

If proposed projects would result in impacts to a State-listed species, an "incidental take" permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a federal ITP for federally listed species). The CDFW will issue an ITP only if:

1) The authorized take is incidental to an otherwise lawful activity;
2) the impacts of the authorized take are minimized and fully mitigated;
3) measures required to minimize and fully mitigate the impacts of the authorized take:
    a) are roughly proportional in extent to the impact of the taking on the species;
    b) maintain the project applicant's objectives to the greatest extent possible; and,
    c) capable of successful implementation; and,
4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing an HCP as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFW staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to Section 7 of the FESA, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take." These species are listed in several statutes that identify "fully protected" species and "specified birds." See Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a "fully protected" species or a "specified bird" occurs, an applicant must design the project to avoid all take.

Fish and Game Code §2080.1 allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to Section 7 of the FESA, or who has received a federal 10(a) permit (federal ITP) pursuant to the FESA, to submit the federal opinion or permit to the CDFW for a determination as to whether the federal document is "consistent" with CESA. If after 30 days the CDFW determines that the federal ITP is consistent with state law, and that all State-listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if the CDFW determines that the federal opinion or permit is not consistent with CESA, or that there are State-listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a CESA permit under Section 2081(b). Section 2080.1 is of no use if an affected species is State-listed, but not federally listed.

State and federal ITPs are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management

endowment fees are usually collected as part of the agreement for the ITP(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

7.3.2 APPLICABILITY TO THE PROPOSED PROJECT

There is no aquatic habitat on the project site, so the project site does not provide fisheries habitat. Two California Candidate bumblebee species, Crotch's bumble bee (*Bombus crotchii*) and Western bumble bee (*Bombus occidentalis*) could occur on the project site. As candidate species, these bumble bees receive the same legal protection afforded to endangered or threatened species (Fish and Game Code, §§ 2074.2 & 2085). Therefore, **impacts to these bumblebee species are regarded as potentially significant, pursuant to CEQA.** These impacts would be reduced to less than significant with implementation of the mitigation measures listed in the Impacts and Mitigation section below.

7.4 California Fish and Game Code § 3503, 3503.5, 3511, and 3513

California Fish and Game Code §3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

7.4.1 APPLICABILITY TO THE PROPOSED PROJECT

The oak trees onsite provide potential nesting habitat for several raptor and passerine bird species, and the privet bushes also provide nesting passerine bird habitat, though the high level of disturbance in the project area discourages nesting on the project site. Any nesting birds would be protected by Fish and Game Code §3503, 3503.5, 3511, and 3513. Preconstruction surveys should be conducted for nesting birds to ensure that there is no direct "take" of nesting birds including their eggs, or young. Any active nests that were found during preconstruction surveys would have to be avoided by the project through the establishment of non-disturbance buffers around any active nest site until the nesting cycle is complete. More specifics regarding preconstruction nesting survey requirements and for active nest protection measures are provided below in the "Impacts and Mitigations" section.

7.5 City of Sonoma General Plan

The City of Sonoma's General Plan was last updated in 2020 and is the fifth version adopted by the City of Sonoma since its first general plan in 1964. This plan implements the collective vision of the community and its desire to preserve and improve upon the essential characteristics that define Sonoma.

7.5.1 ENVIRONMENTAL RESOURCES ELEMENT

The Environmental Resources Element of the General Plan addresses two state-mandated element subjects open space and conservation. The high value placed on environmental resources in and around Sonoma provides the foundation for the goals, policies, and implementation measures in the Environmental Resources Element. The goals, policies, and implementation measures of the Environmental Resources Element of the City of Sonoma's General Plan relevant to the Montaldo Apartments project include the following:

Goal ER-2: Identify, preserve, and enhance important habitat areas and significant environmental resources.

- **Policy 2.1**: Monitor the health of local environmental resources.
  - **Implementation 2.1.1**: Work with the Sonoma Ecology Center and other appropriate parties to establish and maintain an inventory of significant local environmental resources and features.
- **Policy 2.2:** Preserve habitat that supports threatened, rare, or endangered species identified by State or federal agencies.
  - **Implementation 2.2.1**: Evaluate development applications in terms of potential impacts on significant biological resources.
- **Policy 2.3:** Protect and, where necessary, enhance riparian corridors.
  - **Implementation 2.3.1:** Work with the County Water Agency, State Department of Fish and Game, the Sonoma Ecology Center, and other interested parties to implement guidelines and regulations for preserving and enhancing riparian corridors and wildlife habitat.
- **Policy 2.4:** Protect Sonoma Valley watershed resources, including surface and ground water supplies and quality.
  - **Implementation 2.4.1:** Prepare and implement a comprehensive strategy for water conservation and the protection of water quality, including quantified objectives, with the goal of producing a Water Element for the General Plan.
  - **Implementation 2.4.2:** Update the Development Code to ensure that new development incorporates applicable "best-management" construction and post-construction practices and design features, including maintenance programs where warranted, that provide quantified results in reducing run-off and protecting water quality.
  - **Implementation 2.4.3:** Work with the Sonoma County Water Agency, the Valley of the Moon Water District, the Sonoma Ecology Center and other appropriate agencies to monitor groundwater resources and to develop a ground water management plan, including guidelines and standards for preserving and enhancing valley watershed and surface and groundwater resources.
- **Policy 2.6:** Preserve existing trees and plant new trees.
  - **Implementation 2.6.1:** Develop amendments to the Tree Ordinance to further protect significant trees on private property.
  - **Implementation 2.6.2**: Carry out the programs of the City Tree Planting Plan, including preserving existing trees through the Tree Ordinance and increasing canopy cover, streetscape trees, parking lot shading, and tree maintenance.

- **Policy 2.9**: Require development to avoid potential impacts to wildlife habitat, air quality, and other significant biological resources, or to adequately mitigate such impacts if avoidance is not feasible.
    - **Implementation 2.9.1**: Evaluate applications for new development in terms of their potential to expose sensitive uses to substantial air pollutant concentrations and/or to create or emit objectionable odors.

7.5.2 APPLICABILITY TO THE PROPOSED PROJECT

The project will do its best to preserve native trees onsite and those that cannot be preserved will be replanted. The project site is in an urban area and thus does not provide significant habitat or sensitive biological resources. There are no wetlands, other waters such as creeks, or streams on the project site.

7.6 City of Sonoma Tree Ordinance

The City of Sonoma's Tree Ordinance can be found in the City of Sonoma's Municipal code sections 12.08 and 12.09. Section 12.08 covers prohibitions and exceptions pertaining to management of the City's trees as well as explaining the process for obtaining tree alteration, removal, or relocation permits as well as pruning and trimming regulations and guidelines for tree maintenance and replacement. Section 12.09 details the City's Heritage Tree Ordinance. Relevant sections from each ordinance are listed below, followed by a discussion of their applicability to this project.

7.6.1 DEFINITIONS.

Definitions from the tree ordinance that are relevant to this project are the following:

- "Protected tree" means any tree designated to be preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval issued by the city.

- "Significant tree" means any tree having a single trunk circumference greater than one and one-half feet at a height of four and one-half feet, except for those located on a single-family residential property or a multifamily residential property.

- "Significant tree – private" means any tree having a single trunk circumference greater than four and one-half feet at a height of four and one-half feet (54 inches), located on a single-family or multifamily residential property within a front yard or street-side yard setback as defined in SMC Title 19.

7.6.2 SIGNIFICANT TREES.

It is unlawful for any person other than those authorized under emergency circumstances, as set forth within this chapter, to alter, remove, relocate, or cause to be altered, removed, or relocated any significant tree or significant tree, private, as defined in this chapter, unless and until a written permit to do so has first been obtained in accordance with SMC 12.08.050. Any such permit may be declared void by the public works director if its terms are violated. (Ord. 11-2009 § 1(6), 2009; Ord. 09-2003 § 1, 2003).

7.6.3 APPLICATIONS FOR NEW DEVELOPMENT

Tree Information Required at Time of Application. An arborist's report, prepared by an ISA (International Society of Arboriculture) certified arborist, shall be a requirement of all new development. The report shall provide the necessary information to determine the appropriate extent of tree preservation and protection and tree replacement requirements. An arborist shall be selected and retained by the city planner from a list of qualified members provided by the tree committee. All costs and fees for the services of the arborist shall be paid by the applicant and shall be paid in full at the time of the project application. The requirement of an arborist's report may be waived by the determination of the city planner upon the finding of no significant trees on the project site and on adjoining property that could reasonably be affected by the project construction.

The arborist's report shall clearly describe in writing all trees on the property. The report shall indicate the genus and species, the shape, the trunk diameter of each tree and the non-intrusion zone around each tree as determined by the table in SMC 12.08.020(H) and shall indicate those trees which are proposed to be altered, removed, or relocated and the reasons therefor. Tree delineations by trunk location and an accurate outline of each tree's non-intrusion zone must be shown on the project site plan or tentative map, and on every page of the development and improvement plans where any work is proposed within the non-intrusion zone of any protected tree. The property owner of the property and the person in control of the proposed development shall protect and preserve each tree situated within the site of the proposed development during the period the application(s) for the proposed development is being considered by the city.

Tree Replacement Program. A person owning or controlling a new development project shall be required to replace trees designated for removal as part of the approval of the project in accordance with the conditions of approval established by the planning commission or the design review and historic preservation commission as follows:

- Unless otherwise approved by the review authority, tree replacement shall occur on-site and shall, at a minimum, occur at a 1:1 ratio and a 15-gallon box size for each six inches of tree diameter removed.
- If the development site is inadequate in size to accommodate the replacement trees, the trees may be planted on public property with the approval of the public works director.
- Upon the request of the developer and the approval of the city council, the city may accept an in-lieu payment of $100.00 per 15-gallon replacement tree on condition that all such payments shall be used for tree-related educational projects and/or planting programs of the city.

Protected Trees. Development of a property on which a protected tree is located shall be subject to project design and construction requirements including, but not limited to, subsections (F)(1) through (F)(6) of this section. All applicable project design and construction requirements related to the protection of trees shall be implemented in accordance with accepted ISA guidelines, unless modified or waived by the director of public works in consultation with the project arborist.

- Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the non-intrusion zone, or other limit as may

be established in the field by the project arborist. Such fences shall remain continuously in place for the duration of all work undertaken in connection with the development. The area so fenced off shall not be used as a storage area or altered or disturbed except as may be permitted under this subsection.

- If the proposed development, including any site work for the development, will encroach upon the non-intrusion zone of a protected tree, special measures shall be utilized, as approved by the project arborist, to allow the roots to obtain oxygen, water, and nutrients as needed.
- Underground trenching for public improvements shall avoid major support and absorbing tree roots of protected trees. If avoidance is impractical, tunnels shall be made below the roots. Trenches shall be consolidated to service as many units as possible. Trenching or any other excavation related to the project within the drip line of protected trees shall be avoided to the greatest extent possible and shall only be done under the on-site directions of a project arborist.
- Concrete or asphalt paving shall not be placed over the root zones of protected trees, unless otherwise permitted by the project arborist. Artificial irrigation shall not occur within the root zone of oaks, unless deemed appropriate by the project arborist to improve tree vigor or mitigate root loss.
- Compaction of the soil within the non-intrusion zone of protected trees shall be avoided, if possible. Any excavation, cutting, filling, or compaction of the existing ground surface within the non-intrusion zone shall be minimized and subject to such conditions as may be imposed by the project arborist.
- Burning or use of equipment with an open flame near or within the non-intrusion zone shall be avoided. All brush, earth and other debris shall be removed in a manner which prevents injury to the protected tree. Oil, gas, chemicals, or other substances that may be harmful to trees shall not be stored or dumped within the non-intrusion zone of any protected tree, or at any other location on the site from which such substances might enter the non-intrusion zone of a protected tree. Construction materials shall not be stored within the non-intrusion zone of a protected tree.

7.6.4 REMOVAL OF TREES IN ANTICIPATION OF DEVELOPMENT

Rule. A property owner, or the property owner's representative or agent, shall not remove, purposefully damage, or purposefully cause to die any tree on the owner's property with the intent to avoid requirements for tree preservation or protection that may be imposed upon the property under a development application.

Finding of Violation. If the city planner finds that subsection A of this section has been violated, the property owner shall be subject to the enforcement provisions set forth under Article IX of this chapter. In making his/her finding, the city planner shall consider the specific circumstances of the tree removal, including when the removal or damage occurred and the significance of the removed or damaged trees in terms of size, species, health and location.

7.6.5 TREE ALTERATION OR REMOVAL OR RELOCATION PERMITS

Any person desiring to alter, remove or relocate any tree(s) for which a permit is required under the provisions of SMC 12.08.030(B) or 12.08.032 shall make application upon an appropriate

city form to the public works director. The applicant may also submit documentation of any type, including written recommendations from a certified arborist, concerning the health and quality and the desirability of alternatives (e.g., relocation or alteration) to the removal of each tree.

The granting or denying of a tree removal permit should be based upon reasonable standards including:

- The condition of the tree with respect to its general health, structural condition, hazards potential and proximity to existing or proposed structures;
- The necessity of the tree removal to allow construction of improvements or otherwise allow economic or other reasonable enjoyment of the property;
- The number, species, age, size, and location of existing trees in the area and the effect of the requested removal on shade areas, air pollution, historic values, scenic beauty, and the general welfare of the city as a whole.
- The review and permit process is not intended to prevent the necessary removal of trees for safety purposes but is intended to provide a forum in which the value (i.e., shade, appearance, etc.) of the tree or trees proposed for removal can be measured against the reasons for which the applicant desires to have it altered, removed, or relocated. Replacement trees should normally be required to mitigate the loss of the tree.

Prior to making a determination on the application, the tree committee shall inspect the tree(s) sought to be altered, removed or relocated. The tree committee may also refer the application to another department, commission or committee of the city, as they deem appropriate, and may require the applicant to provide additional information which they deem necessary in order to make an informed decision on the application. However, the tree committee shall render a decision on the application within 30 days of its referral to the committee by the public works director.

If the tree committee approves an application to alter, remove, or relocate a tree, it shall direct the public works director to issue a permit, subject to such conditions as the committee deems appropriate, which may include the planting of replacement trees. A permit granted under the provisions of this section shall be valid for a period of 60 days from the date of issuance unless a longer period is stated in the permit, or an additional 60 days' extension is granted by the public works director. If the work authorized by the permit is not commenced prior to the expiration date, the permit shall become null and void. Once the work authorized by a permit is commenced, it shall be expeditiously pursued to completion. (Ord. 11-2009 § 1(12), (13), 2009; Ord. 09-2003 § 1, 2003; Ord. 96-11, 1996).

7.6.6 HERITAGE TREE ORDINANCE

Heritage tree defined: As used in this chapter, "heritage tree" means a tree or group of trees specifically designated by official act of the parks and recreation commission that:

A. The tree or group of trees has historical significance or has taken on the aura of historical appeal; or

B. The tree or group of trees is mutually dependent upon each other for survival; or

C. The tree or group of trees is considered an outstanding specimen of its species; or

D. The tree or group of trees is the size of 50 inches or more in diameter measured at 24 inches above natural grade; and

E. The tree or group of trees has been recommended as such by the parks and recreation commission and dedicated and accepted by the city council of Sonoma.

An outstanding specimen is a tree which has been determined by the City of Sonoma's Parks and Recreation Commission Heritage Tree Committee to be healthy, has attained maturity and is well formed. Any tree designated as a heritage tree may by identified with a marker or by any other means as determined by the parks and recreation commission. (Ord. 75-11 § 1, 1976).

Heritage tree dedication: The parks and recreation commission's heritage tree committee shall make a recommendation to the commission whether a tree, which meets the definitions under SMC 12.09.020, has a significant historical or horticultural value to the city to warrant its dedication as a heritage tree. Not all trees which meet the definition under SMC 12.09.020 will be significant, and the parks and recreation commission shall weigh the cost of maintenance against the value of the tree(s) as a Sonoma landmark in determining whether a tree should be dedicated as a heritage tree. The parks and recreation commission shall not recommend acceptance of dedication of a proposed heritage tree until at least six months (182 calendar days) has elapsed from the time the proposed dedication is taken under consideration by the commission.

Upon the recommendation of the parks and recreation commission that a tree(s) meets the criteria of a heritage tree and should be dedicated as such, the owner of the tree(s) may dedicate the tree(s) to the city, if he also dedicates right of access for maintenance and protection, and the dedication is accepted by resolution of the city council. Dedication shall be subject to such conditions as the council considers proper in the case. (Ord. 75-11 § 1, 1976).

Removal and damaging of heritage trees prohibited:

A. It is unlawful for any person to break, injure, deface, mutilate, kill or destroy any heritage tree or set fire or permit any fire to burn where such fire or the heat thereof will injure any portion of a heritage tree, or to cause or permit any wire charged with electricity to come into contact therewith, or to allow any gas, liquid, or solid substance which is harmful to such trees to come in contact with their leaves.

B. It is unlawful and it is prohibited for any person other than the director of public works or his duly authorized representative to place, apply, attach, or keep attached to any such heritage tree any wire, rope, sign, paint, or any other substance, structure, thing or device of any kind or nature whatsoever until a written permit to do so has first been obtained from the parks and recreation commission. (Ord. 75-11 § 1, 1976).

Designated historical trees: In cases in which the city and property owner cannot reach an agreement for the dedication of a proposed heritage tree, or where the city finds that a tree's historical importance is outweighed by its dedication and maintenance costs, the city's parks and recreation commission may declare such a tree a designated historical tree.

The purpose of such identification is to recognize and locate trees of historical significance in the city. Such identification as a designated historical tree is not intended nor shall it restrict the owner of such property where the tree shall occur from any normal exercise of his property rights that are recognized under law.

Such identification shall include the marking of designated historical trees on maps of the historic preservation combining district and on a master heritage and historical tree map to be prepared and maintained by the city planning department. Identification shall also include written notification to the property owner of such designation and, if so, ordered by the parks and recreation commission and accepted by the property owner, a physical marker may be placed on or near a designated historical tree. (Ord. 75-11 § 1, 1976).

Penalties: Any person violating any of the provisions of this chapter or failing to comply with them shall upon conviction thereof be punished by a fine not to exceed $500.00, or by imprisonment not to exceed six months, or both such fine and imprisonment. (Ord. 75-11 § 1, 1976).

7.6.7 APPLICABILITY TO THE PROPOSED PROJECT

A tree survey of the project site was performed by John C. Meserve (ISA Certified Arborist, WE #0478A) of Horticultural Associates and a Tree Inventory Report (Attachment B) was prepared on August 21, 2021. Native trees observed onsite include coast live oak, black oak, and valley oak. Non-native trees observed included Glossy Privet, Grecian Laurel (*Laurus nobilis*). Flowering Pear (*Pyrus calleryana*), Fig (*Ficus carica*), Chinese Pistache (*Pistacia chinensis*), Japanese Loquat (*Eriobotrya japonica*), shiny Xylosma (*Xylosma congesta*), Plum (*Prunus domestica*), and Edible Pear (*Pyrus communis*). According to the Existing Conditions drawing prepared by the project's civil engineer, CBG Civil Engineers, and dated July 13, 2022, using tree species information provided in the Tree Inventory Report, 76 trees are marked for removal, with 16 trees marked to remain (Attachment C).

As the project site is a residential property, and none of the trees marked for removal on the Existing Conditions drawing (Attachment C) have single trunk circumferences greater than 4.5 feet (54 inches), none of them would be considered to be "significant trees" under the City of Sonoma's Tree Ordinance. Though it will be up to the City of Sonoma to determine which trees on the project site would be considered as "protected trees", it is unlikely that any tree proposed for removal will be determined to be "protected trees", since they are not large enough to be considered as "significant trees – private." It is even more unlikely that any trees marked for removal would qualify as heritage trees under the ordinance, as none of them are larger than 40 inches DBH, but the final determination on heritage trees would be up to the City of Sonoma's Parks and Recreation Commission Heritage Tree Committee. The number of trees to be removed may increase slightly once the grading plans are finalized.

Hence, a tree permit would be required for the project from the City of Sonoma, and mitigation in the form of replacement tree planting would be required to offset any removed trees. According to the Tree Ordinance: "unless otherwise approved by the review authority, tree replacement shall occur on-site and shall, at a minimum, occur at a 1:1 ratio and a 15-gallon box size for each six inches of tree diameter removed. Any trees onsite that are proposed for protection will need adequate fencing around the dripline (that is, the outer edge of the canopy) to ensure their root zone is protected during grading and to ensure their long-term preservation.

8. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the Corps, the RWQCB, the State Water Resources Control Board (SWRCB), and the CDFW to determine those areas within a project area that would be subject to their regulation.

8.1 U.S. Army Corps of Engineers Jurisdiction and General Permitting

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), the Corps regulates the disposal of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States.

On November 18, 2021, the U.S. EPA and the Corps (the "agencies") announced the signing of a proposed rule to revise the definition of "waters of the United States." On December 7, 2021, the proposed rule was published in the Federal Register. The intent of the proposed rule was to put back into place the pre-2015 definition of "waters of the United States," (40 CFR 230.3(s)). The final Revised Definition of "Waters of the United States" was published in the Federal Register on January 18, 2023 (33 C.F.R. § 328.3) (the final "Rule"). The 2023 Rule conforms to the limits expressed in the 2006 Rapanos decision, in the plurality opinion and Justice Kennedy's concurring opinion. Additionally, the agencies are in receipt of the U.S. Supreme Court's May 25, 2023 decision in the case of *Sackett v. Environmental Protection Agency*. In light of this decision, the agencies will interpret the phrase "waters of the United States" consistent with the Supreme Court's decision in the *Sackett* case. In *Sackett*, the Supreme Court adopted the Rapanos plurality's test for adjacent wetlands: only those wetlands with a continuous surface connection to other regulated waters, such that the two are indistinguishable.

In the published 2023 rule from the Federal Register, the term "waters of the United States" is defined as:

1. Waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide
2. Interstate waters including interstate wetlands;
3. Intrastate lakes and ponds, wetlands, streams:

i. That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section; or
ii. That either alone or in combination with similarly situated waters in the region, **significantly affect** the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

4. Impoundments of waters otherwise defined as waters of the United States under the definition, other than impoundments of waters identified under paragraph (a)(5) of this section
5. Tributaries of waters identified in (a)(1) or (2), (4), or (6) of this section:
   i. That are relatively permanent, standing or continuously flowing bodies of water; or
   ii. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.
6. The territorial seas;
7. Wetlands adjacent to the following waters:
   i. Waters identified in paragraph (a)(1) of this section; or
   ii. Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3)(i) of this section and with a continuous surface connection to such waters; or
   iii. Waters identified in paragraph (a)(2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

Waters of the United States do not include:

8. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

9. Prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

10. Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water.

11. Artificially irrigated areas that would revert to dry land if the irrigation ceased;

12. Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

13. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

14. Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

15. Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

Limits of Corps' jurisdiction:

a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)

b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:
(1) Extends to the high tide line, or
(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:
(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark ("OHWM"), or
(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

The OHWM on a non-tidal water is:

the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

The Agencies jointly prepared an Instructional Guidebook to aid Corps field staff in completing the "Approved Jurisdictional Determination Form," taking into account judicial decisions (i.e., Rapanos v. United States, Carabell v. U.S. Army Corps of Engineers and U.S. v. Riverside Bayview Homes, Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)) interpreting the extent of Corps jurisdiction, and is intended to be used as the U.S. Army Corps of Engineers Regulatory National Standard Operating Procedures for conducting an approved jurisdictional determination. This Approved Jurisdictional Determination Form will be updated to reflect the 2023 Rule.

8.2 Permitting Corps Jurisdictional Areas

To remain in compliance with Section 404 of the CWA, project proponents and property owners (applicants) are required to be permitted by the Corps prior to discharging or otherwise impacting waters of the United States. In many cases, the Corps must visit a proposed project area (to conduct a "jurisdictional determination") to confirm the extent of area falling under their jurisdiction prior to authorizing any permit for that project area. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404, the Corps normally provides two alternatives for permitting impacts to the type of waters of the United States found in the project area. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)). The application process for Individual Permits is extensive and includes public interest review procedures (i.e., public notice and receipt of public comments) and must contain an "alternatives analysis" that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). The alternatives analysis is also typically reviewed by the federal EPA and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to the proposed project if there would be impacts to waters of the U.S., and the proposed permitted action is not a water dependent project (e.g., a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed permitted impacts are unavoidable. Individual Permits may be available for use in the event that discharges into regulated waters fail to meet conditions of NWP(s).

NWPs are a type of general permit administered by the Corps and issued on a nationwide basis that authorize minor activities that affect Corps regulated waters. Under NWP, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330, Appendices A and C). It is also important to note that pursuant to 33 CFR Section 330.4(e), there may be special regional conditions or modifications to NWPs that could have relevance to individual proposed projects. Finally, pursuant to 33 CFR Section 330.6(a), Nationwide permittees may, and in some cases must, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.,* must receive "verification" from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of "no net loss" of wetlands (waters of the United States) from project area development. Therefore, it is incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.,* impacts would be mitigated). Typically, the Corps requires mitigation to be "in-kind" (i.e., seasonal wetlands would be filled, mitigation would include seasonal wetland mitigation), and at a minimum of a 1:1 replacement ratio (i.e., one acre or fraction there of recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required if the Permittee is responsible for the mitigation. In some cases, the Corps allows "out-of-kind" mitigation if the compensation site has greater value than the impacted site. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet mitigation compensation requirements. Mitigation banks have defined service areas and the Corps may only allow their use when a project would have minimal impacts to wetlands.

8.2.1 APPLICABILITY TO THE PROPOSED PROJECT

There are no aquatic resources of any kind on the project site. No swales, scour, or any other indicators of wetland hydrology were observed onsite during the June 20, 2023, site visit. There are no wetlands or other waters of the U.S. on the project site and no federal permit from the Corps is required.

8.3 California Regional Water Quality Control Board (RWQCB)

8.3.1 SECTION 401 OF THE CLEAN WATER ACT

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the U.S., including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the CEQA, the CESA, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality. Where a project will result in dredge or fill of non-federal waters of the State, the RWQCB will authorize those fills through waste discharge requirements issued under the Porter Cologne Water Quality Control Act.

On April 2, 2019, the SWRCB adopted a State-level definition of "wetlands,' which definition is broader than the federal definition in that unvegetated areas may be considered a wetland water of the State. As a part of the same policy, the SWRCB adopted permit procedures and standards governing the discharge of dredged or fill material into wetlands and other waters of the State. The policy includes, among other things, requirements for analyses to identify the least environmentally damaging practicable alternative (LEDPA) and compensatory mitigation standards including a minimum 1:1 ratio for wetlands and streams, and full functional replacement of all waters on top of

this minimum where applicable. The policy, which will govern both Section 401 certifications and Waste Discharge Requirements (WDRs), is scheduled to become effective nine months following the completion of review by the California Office of Administrative Law.

8.3.2 APPLICABILITY TO THE PROPOSED PROJECT

There are no aquatic resources of any kind on the project site and as such no areas that would fall under the jurisdiction of the RWQCB pursuant to Section 401 of the Clean Water Act.

8.3.3 PORTER-COLOGNE WATER QUALITY CONTROL ACT

The uncontrolled discharge of pollutants into impaired water bodies is considered particularly detrimental. According to the EPA, **sediment is one of the most widespread pollutants contaminating U.S. rivers and streams**. Sediment runoff from construction sites is 10 to 20 times greater than from agricultural lands and 1,000 to 2,000 times greater than from forest lands (EPA 2005). Consequently, the discharge of stormwater from large construction sites is regulated by the RWQCB under the Clean Water Act and California's Porter-Cologne Water Quality Control Act.

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the State by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices (BMPs) for any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

8.3.4 APPLICABILITY TO THE PROPOSED PROJECT

All stormwater runoff currently flows into the City of Sonoma's existing storm drain system. It is expected that project redevelopment will continue to utilize the City's existing storm drain system. Pre-treatment of stormwater in accordance with Provision C.3 (discussed in the section below) prior to release into the City stormdrain system will be necessary. Additionally, during

project construction it is important for the project proponent to have the components of a SWPPP and a SWMP in place; these documents are typically prepared by the project civil engineer. Please see the sections below for further discussion on site disturbance (grading) and stormwater management.

Since any "threat" to water quality could conceivably be regulated by the RWQCB or the SWRCB pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed project to be sure that adequate pre and post construction BMPs are incorporated into the project implementation plans. Such BMPs, if correctly installed and maintained, are likely to keep the project in compliance with the Porter-Cologne Water Quality Control Act.

9. STATE WATER RESOURCES CONTROL BOARD (SWRCB)/RWQCB – STORMWATER MANAGEMENT

9.1 Construction General Permit

While federal Clean Water Act NPDES regulations allow two permitting options for construction related stormwater discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide Construction General Permit at this time that will apply to all stormwater discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (CalTrans).

The Construction General Permit requires all dischargers where construction activity disturbs greater than one acre of land or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface to:

1. Develop and implement a SWPPP which specifies BMPs that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation. Achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

3. Perform inspections of all BMPs.

This Construction General Permit is implemented and enforced by the nine RWQCBs. It is also enforceable through citizens' suits and represents a dramatic shift in the SWRCB's approach to regulating new and redevelopment sites, imposing new affirmative duties and fixed standards on builders and developers.

<u>Types of Construction Activity Covered by the Construction General Permit</u>

- clearing,
- grading,
- disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area.

Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity.

Construction activity does not include:

- routine maintenance to maintain original line and grade,
- hydraulic capacity, or original purpose of the facility,
- nor does it include emergency construction activities required to protect public health and safety.

The Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a SWRCB-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the RWQCB.

Improving the quality of site runoff is necessary to improve water quality in impaired and threatened streams, rivers, and lakes (that is, water bodies on the EPA's 303(d) list). The RWQCB prioritizes the water bodies on the 303(d) list according to potential impacts to beneficial uses. Beneficial uses can include a wide range of uses, such as nautical navigation; wildlife habitat; fish spawning and migration; commercial fishing, including shellfish harvesting; recreation, including swimming, surfing, fishing, boating, beachcombing, and more; water supply for domestic consumption or industrial processes; and groundwater recharge, among other uses. The State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these impaired water bodies. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating the applicable water quality standards.

Pursuant to the Clean Water Act, the RWQCB regulates construction discharges under the NPDES. The project sponsor of construction or other activities that disturb more than one acre of land must obtain coverage under NPDES Construction General Permit Order 2009-0009-DWQ, administered by the RWQCB[1].

[1] CGP Order 2009-0009-DWQ remains in effect but has been amended by CGP Order 2009-0014-DWQ, effective February 14, 2011, and CGP Order 2009-0016-DWQ, effective July 17, 2012. The first amendment merely provided

9.1.1 APPLICABILITY TO THE PROPOSED PROJECT

To obtain coverage under the SWRCB administered Construction General Permit, the applicant (typically through its civil engineer) must electronically file a number of permit-related compliance documents (Permit Registration Documents (PRDs), including a Notice of Intent (NOI), a risk assessment, site map, signed certification, SWPPP, Notice of Termination (NOT), NAL exceedance reports, and other site-specific PRDs that may be required. The PRDs must be prepared by a Qualified SWPPP Practitioner (QSP) or Qualified SWPPP Developer (QSD) and filed by a Legally Responsible Person (LRP) on the RWQCB's Stormwater Multi-Application Report Tracking System (SMARTS). (QSDs are typically civil engineers, professional hydrologists, engineering geologists, or landscape architects.) Once filed, these documents become immediately available to the public for review and comment. At a minimum, the SWPPP shall identify BMPs for implementation during project construction that are in accordance with the applicable guidance and procedures contained in the California Stormwater Quality Association's *California Stormwater Best Management Practices Handbook* (2015).

9.2 RWQCB Municipal Stormwater Permitting Programs

The federal Clean Water Act was amended in 1987 to address urban stormwater runoff pollution of the nation's waters. In 1990, the EPA promulgated rules establishing Phase 1 of the NPDES stormwater program. The Phase 1 program for Municipal Separate Storm Sewer System (MS4s) requires operators that serve populations of 100,000 or greater to implement a stormwater management program to control polluted discharges from these MS4s. While Phase 1 of the municipal stormwater program has focused on large urban areas, Phase 2 of the municipal stormwater program was promulgated by the EPA for smaller urban areas including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

MS4 permits require the discharger (or dischargers that are permitted by the MS4 permittees) to develop and implement a SWMP with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify which BMPs will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

9.2.1 NPDES C.3 REQUIREMENTS

The NPDES C.3 requirements went into effect for any project (public or private) that is "deemed complete" by the City or County (Lead Agency) on or after February 15, 2005, and which will result in the creation or replacement (other than normal maintenance) of at least 10,000 square feet of impervious surface area (roofs, streets, patios, parking lots, etc. Provision C.3 requires the onsite treatment of stormwater prior to its discharge into downstream receiving waters. Note that

additional clarification to Order 2009-0009-DWQ, while Order 2009-0016-DWQ eliminated numeric effluent limits on pH and turbidity (except in the case of active treatment systems), in response to a legal challenge to the original order.

these requirements are in addition to the existing NPDES requirements for erosion and sedimentation controls during project construction that are typically addressed through acquisition of coverage under the SWRCB administered Construction General Permit. The C.3 requirements are typically required to be implemented by MS4 permittees (and their constituencies).

Projects subject to Provision C3 must include the capture and onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to design and implement stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable.* While the Clean Water Act does not define "maximum extent practicable," the SWMPs required as a condition of the municipal NPDES permits identify control measures (i.e., BMPs) and, where applicable, performance standards, to establish the level of effort required to satisfy the maximum extent practicable criterion. It is ultimately up to the professional judgment of the reviewing municipal staff in the individual jurisdictions to determine whether a project's proposed stormwater controls will satisfy the maximum extent practicable criterion. However, there are numeric criteria used to ensure that treatment BMPs have been adequately sized to accommodate and treat a site's stormwater. The C3 requirements are quite extensive, and their complete explanation is not provided here. However, the following are minimums that should be understood and adhered to:

- The applicant must provide a detailed and realistic site design *and impervious surface area calculations*. This site design *and calculations* will be used by the Lead Agency (County or City) to determine/*verify* the amount of impervious surface area that is being created or replaced. It should include all proposed buildings, roads, walkways, parking lots, landscape areas, etc., that are being created or redeveloped. If large (greater than 10,000 square feet) lots are being created an effort will need to be made to determine the total impervious surface area that could be created on that parcel. For example, if only a portion of the lot is shown as a "building envelope" then the lead agency will need to consider that a driveway will have to be constructed to access the envelope and that the envelope will then be developed as shown. If the C.3 thresholds are met (creation/redevelopment of 10,000 square feet of impervious surface area), a Stormwater Control Plan (SWCP) (if required by the Lead Agency, or whatever steps for compliance with Provision C3 are required locally) must accompany the application.

- If a SWCP is required by the Lead Agency for the project it must be stamped by a Licensed Civil Engineer, Architect, or Landscape Architect.

9.2.2 APPLICABILITY TO THE PROPOSED PROJECT

It is the applicant's responsibility to ensure that the project civil engineer prepares all required Stormwater Planning documents for submittal to the City of Sonoma so that compliance with its MS4 permit requirements can be verified as reported to the RWQCB or as otherwise necessary to comply with the Clean Water Act NPDES requirements.

10. CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE PROTECTIONS

10.1.1 SECTION 1602 OF CALIFORNIA FISH AND GAME CODE

Pursuant to Section 1602 of the California Fish and Game Code: "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur:

(1) CDFW receives written notification regarding the activity in the manner prescribed by CDFW. The notification shall include, but is not limited to, all of the following:
   (A) A detailed description of the project's location and a map.
   (B) The name, if any, of the river, stream, or lake affected.
   (C) A detailed project description, including, but not limited to, construction plans and drawings, if applicable.
   (D) A copy of any document prepared pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
   (E) A copy of any other applicable local, State, or federal permit or agreement already issued.
   (F) Any other information required by CDFW" (Fish & Game Code 2014).

Please see Section 1602 of the current California Fish and Game Code for further details.

Please also note that while not stated in the regulations above, the CDFW typically considers its jurisdiction to include riparian vegetation (that is, the trees and bushes growing along the stream). Thus, any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, including its riparian vegetation, would require entering into a Streambed Alteration Agreement (SBAA) with the CDFW prior to commencing with work in the stream. However, prior to authorizing such permits, the CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

10.1.2 APPLICABILITY TO THE PROPOSED PROJECT

There are no streams or drainages that have a bed, bank, or channel on the project site that would be regulated by the CDFW. Hence, an SBAA with the CDFW is not necessary for this project.

11. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

A CEQA lead agency must determine if a proposed activity constitutes a project requiring further review pursuant to the CEQA. Pursuant to CEQA, a lead agency would have to determine if there could be significant adverse impacts to the environment from a proposed project. Typically, if within the city limits, the city would be the CEQA lead agency. If a discretionary permit (i.e., conditional use permit) would be required for a project (e.g., an occupancy permit must be issued), the lead agency typically must determine if there could be significant environmental impacts. This is usually accomplished by an "Initial Study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of

environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are "Categorical Exemptions" that apply to the proposed activity; thus, the activity is exempt from CEQA. The Categorical Exemptions are provided in CEQA. There are also Statutory Exemptions in CEQA that must be investigated for any proposed project. If the project is not exempt from CEQA, the lowest level of review typically reserved for projects with no significant effects on the environment would be for the lead agency to prepare a "Negative Declaration." If a proposed project would have only minimal impacts that can be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" (MND) is typically prepared by the lead agency. Finally, those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

11.1.1 Applicability to the Proposed Project

This report has been prepared as a Biology section that is suitable for incorporation by the CEQA lead agency (in this case the City of Sonoma) into a CEQA review document such as a MND or an Environmental Impact Report. This document addresses potential impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA.

12. IMPACTS ANALYSIS

Below the criteria used in assessing impacts to Biological Resources is presented.

12.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

12.1.1 THRESHOLDS OF SIGNIFICANCE

12.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.

- Have a substantial adverse effect on state or federally protected "wetlands" (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or State HCP.

12.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the Corps regulates the discharge of dredged or fill material into waters of the U.S., which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the State. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

12.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, the CDFW regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which the CDFW typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

13. IMPACT ASSESSMENT AND PROPOSED MITIGATION

In this section we discuss potential impacts to sensitive biological resources including special-status animal species. We follow each impact with a mitigation prescription that when implemented would reduce impacts to the greatest extent possible. This impact analysis is based on Montaldo Apartments Preliminary Site Plan prepared by CBG Civil Engineers, and dated February 1, 2023.

Appendix G – Checklist Items are listed below. Where there would be significant impacts to checklist categories, these impacts and required mitigation measures are fully discussed in the sections below.

Would the Proposed Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

Yes. Pallid bat, two special-status bumble bees, and nesting birds could all be impacted by the proposed project. See the impacts and mitigations detailed below.

Would the Proposed Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS?

No. There is no riparian habitat or sensitive natural community on the project site that has been identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Therefore, the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.

Would the Proposed Project have a substantial adverse effect on state or federally protected "wetlands" (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No. There are no aquatic resources of any kind on the proposed project site. No swales, scour, or any other indicators of wetland hydrology or wetland plants were observed during the June 20, 2023, site visit. There are no wetlands or other waters of the U.S. or State on the project site and no federal or state permits from the Corps, the RWQCB, or the CDFW would be required.

Would the Proposed Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No. The proposed project would not adversely impact or interfere with wildlife movement corridors. The project site is an anthropogenic habitat that is surrounded by residential and commercial development.

Would the Proposed Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Yes, there is a City of Sonoma tree ordinance and proposed tree removal must be addressed. There are no other local policies or ordinances with which this project would conflict.

Would the Proposed Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No, there are no Habitat Conservation Plans or Natural Community Conservation Plans in force in Sonoma County.

13.1 Impact BIO-1 Development of the Project Would Have a Potentially Significant Adverse Impact on Nesting Birds (Potentially Significant)

Red-tailed Hawk (*Buteo jamaicensis*), Cooper's Hawk (*Accipiter cooperii*), and Red-shouldered Hawks (*Buteo lineatus*) are all known from the area and could nest on the project site. Common songbirds (passerine birds) could also nest on the project site. All of these birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their eggs and young are protected under California Fish and Game Code Sections 3503, 3503.5. Any project-related impacts to these species would be considered a significant adverse impact. Potential impacts to these species from the proposed project include disturbance to nesting birds and possibly death of adults and/or young. In the absence of survey results, it must be concluded that impacts to nesting raptors and songbirds from the proposed project would be **potentially significant pursuant to CEQA.** This impact could be mitigated to a level considered less than significant with implementation of Mitigation Measure BIO-1.

13.2 Mitigation Measure BIO-1. Nesting Birds

To avoid impacts to nesting birds, a nesting survey shall be conducted within 15 days of commencing with construction work or tree removal if this work would commence between February 1st and August 31st. The nesting survey shall include an examination of all buildings onsite and all trees onsite and within 200 feet of the entire project site (i.e., within a zone of influence of nesting birds), not just trees slated for removal. The zone of influence includes those areas outside the project site where birds could be disturbed by earth-moving vibrations and/or other construction-related noise.

If birds are identified nesting on or within the zone of influence of the construction project, a qualified biologist shall establish a temporary protective nest buffer around the nest(s). The nest buffer shall be staked with orange construction fencing. The buffer must be of sufficient size to protect the nesting site from construction-related disturbance and shall be established by a qualified ornithologist or biologist with extensive experience working with nesting birds near and on construction sites. Typically, adequate nesting buffers are 75 feet from the nest site or nest tree dripline for passerine birds and up to 300 feet for sensitive nesting birds t including raptor species known the region of the project site. Upon completion of nesting surveys, if nesting birds are identified on or within a zone of influence of the project site, a qualified ornithologist/biologist that frequently works with nesting birds shall prescribe adequate nesting buffers to protect the nesting birds from harm while the project is constructed.

No construction or earth-moving activity shall occur within any established nest protection buffer prior to September 1 unless it is determined by a qualified ornithologist/biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones, or that the nesting cycle is otherwise completed. In the region of the project site, most species complete nesting by mid-July. This date can be significantly earlier or later and would have to be determined by the qualified biologist. At the end of the nesting cycle, and fledging from the nest by its occupants, and independence from the nest tree, as determined by a qualified biologist, temporary nesting buffers may be removed, and construction may commence in established nesting buffers without further regard for the nest site. ***Implementation of this mitigation measure would reduce impacts to nesting birds to a level regarded as less than significant pursuant to CEQA.***

13.3 Impact BIO-2. Bats – Tree and Building Removal and Site Development May Have a Potentially Significant Impact on Pallid Bat (Potentially Significant)

The trees and buildings onsite may provide roosting and maternity habitat for special-status bats including the pallid bat (*Antrozous pallidus*). This bat species are designated by the State as a "species of special concern." In accordance with the CEQA Guidelines (Section 15380) which protects "rare" and "endangered" species as defined by CEQA (species of special concern meet this CEQA definition), impacts to this bat species would be considered a **potentially significant adverse impact**. Potential impacts to special-status bats from the proposed project include loss of maternity and/or roosting habitat, death of individual adult bats and/or young. This impact could be mitigated to a less than significant level.

13.4 Mitigation Measure BIO-2. Bats

In order to avoid impacts to roosting pallid bat or other special-status bats, building or tree removal shall only be conducted during seasonal periods of bat activity: between August 31 and October 15, when bats would be able to fly and feed independently, and between March 1 and April 1st to avoid hibernating bats, and prior to the formation of maternity colonies. Then a qualified biologist, one with at least two years of experience surveying for bats, shall do preconstruction surveys for roosting bats within 14 days of starting work. If the qualified biologist finds evidence of bat presence during the surveys, then he/she shall develop a plan for removal and exclusion, in conjunction with the CDFW.

If building or tree removal must occur outside of the seasonal activity periods mentioned above (i.e., between October 16 and February 28/29, or between April 2 and August 30), then a qualified biologist, one with at least two years of experience surveying for bats, shall do preconstruction surveys within 14 days of starting work. If roosts are found, a determination shall be made whether there are young. If a maternity site is found, impacts to the maternity site will be avoided by establishment of a non-disturbance buffer until the young have reached independence. The size of the buffer zone should be determined by the qualified bat biologist at the time of the surveys. If the qualified biologist finds evidence of bat presence during the surveys, then he/she shall develop a plan for removal and exclusion, when there are not dependent young present, in conjunction with the CDFW. ***Implementation of this mitigation measure would reduce impacts to nesting birds to a level regarded as less than significant pursuant to CEQA.***

13.5 Impact BIO-3. Development of the Project Would Have a Potentially Significant Adverse Impact on Crotch's Bumblebee or Western Bumblebee

On June 12, 2019, the California Fish and Game Commission (Commission) voted to accept a petition from the Xerces Society to consider listing four subspecies of bumble bee under CESA, two of which have current ranges that include the project site: Crotch's bumble bee (*Bombus crotchii*) and Western bumble bee (*Bombus occidentalis*). A recent court decision determined that the California Fish and Game Commission has the authority to list insects. Candidacy was reinstated for these bumble bee species on September 30, 2022. As candidate species, they receive the same legal protection afforded to endangered or threatened species (Fish and Game Code, §§ 2074.2 & 2085).

No documented observations of Crotch's or western bumblebee occur within the project site. However, until recently, no one has been surveying for bumblebee species. The proposed project could constitute a potentially significant impact on Crotch's or western bumble bees because no focused surveys have been conducted to date, the site is within the range for these species, and the ruderal herbaceous field behind the existing house with small mammal burrows provide potentially suitable underground nesting habitat. Should Crotch's or western bumblebee colonies or overwintering queens be present in underground nests in project construction areas, work activities related to the proposed project could adversely affect these species and their habitats.

Accordingly, impacts to Crotch's bumblebee and Western bumblebee from the proposed project would be regarded as potentially significant pursuant to the CEQA. Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA**.**

13.6 Mitigation BIO-3. Special Status Bumblebees

To minimize the take of Crotch's and western bumblebee species, a qualified entomologist shall conduct a take avoidance survey for active bumblebee colony nesting sites in any previously undisturbed area prior to the start of construction, if the work will occur during the flying season (March through August). Survey results, including negative findings, shall be submitted to the City of Sonoma prior to the start of ground-disturbing activities. Surveys shall take place during the flying season when the species is most likely to be detected above ground. The surveys shall

occur when temperatures are above 60 degrees Fahrenheit (°F), on sunny days with wind speeds below 8 miles per hour, and at least 2 hours after sunrise and 3 hours before sunset as these are the best conditions to detect bumblebees. Surveyors shall conduct transect surveys focusing on detection of foraging bumblebees and underground nests using visual aids such as binoculars. At a minimum, a survey report shall provide the following: If no Crotch's or western bumblebees or potential Crotch's or western bumblebees are detected, no further mitigation is required. If potential Crotch's or western bumblebees are seen but cannot be identified, the applicant shall obtain authorization from CDFW to use nonlethal netting methods to capture bumblebees to identify them to species. If protected bumblebee nests are found, a plan to protect bumblebee nests and individuals to ensure no take of Crotch's and western bumblebee species shall be developed by a qualified entomologist in consultation with the City of Sonoma's Planning Department. The Planning Department shall approve the plan prior to implementation. ***Implementation of this mitigation measure would reduce impacts to protected bumblebees to a level considered less than significant pursuant to the CEQA.***

13.7 Impact BIO-4. Development of the Project Would Have a Significant Adverse Impact on Trees (Significant).

According to the City of Sonoma's Tree Ordinance, a "protected tree" is any tree designated to be preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval issued by the city; a "significant tree" means any tree having a single trunk circumference greater than one and one-half feet (18 inches) at a height of four and one-half feet, except for those located on a single-family residential property or a multifamily residential property; a "significant tree – private" means any tree having a single trunk circumference greater than four and one-half feet at a height of four and one-half feet (54 inches), located on a single-family or multifamily residential property within a front yard or street-side yard setback as defined in SMC Title 19.

A tree survey of the project site was performed by a certified arborist in August 2021 (Attachment B). Native trees observed onsite include coast live oak, black oak, and valley oak. Non-native trees observed included glossy privet, Grecian laurel (*Laurus nobilis*). flowering pear (*Pyrus calleryana*), fig (*Ficus carica*), Chinese pistache (*Pistacia chinensis*), Japanese loquat (*Eriobotrya japonica*), shiny xylosma (*Xylosma congesta*), plum (*Prunus domestica*), and edible pear (*Pyrus communis*).

According to the Existing Conditions drawing (Attachment C) prepared by the project's civil engineer, CBG Civil Engineers, and dated July 13, 2022, using tree species information provided in the Tree Inventory Report (Attachment B), 76 trees are marked for removal, with 16 trees marked to remain. The number of trees to be removed may increase slightly once the grading plans are finalized.

Hence, a tree permit would be required for the project from the City of Sonoma, and mitigation would be required to offset any removed trees. Any trees onsite that are determined to be "protected trees" will need adequate fencing around the dripline (that is, the outer edge of the canopy) to ensure their root zone is protected during grading and to ensure their long-term preservation. *Removal of a tree without a tree permit from the City of Sonoma is a significant*

adverse impact pursuant to CEQA. This impact could be reduced to a less than significant level by incorporating Mitigation Measure BIO-4 below.

13.8 Mitigation Measure BIO-4. Impacts to Protected Trees

Approximately 76 trees are marked for removal by the proposed project. Implementation of the following mitigation would reduce impacts to trees to a level considered less than significant.

To offset impacts resulting from the removal of trees, replacement trees shall be planted per the City of Sonoma's Tree Protection Ordinance, as determined by the Public Works Director. According to the Tree Protection Ordinance's Tree Replacement Program:

- A person owning or controlling a new development project shall be required to replace trees designated for removal as part of the approval of the project in accordance with the conditions of approval established by the planning commission or the design review and historic preservation commission as follows:
    - Unless otherwise approved by the review authority, tree replacement shall occur on-site and shall, at a minimum, occur at a 1:1 ratio and a 15-gallon box size for each six inches of tree diameter removed.
    - If the development site is inadequate in size to accommodate the replacement trees, the trees may be planted on public property with the approval of the public works director.
    - Upon the request of the developer and the approval of the city council, the city may accept an in-lieu payment of $100.00 per 15-gallon replacement tree on condition that all such payments shall be used for tree-related educational projects and/or planting programs of the city.

If required by the City of Sonoma, a tree preservation and management plan shall be prepared for the project. Preparation of this plan and subsequent planting and monitoring shall be a condition of project approval and shall be tied to a security bond posted by the developer. A cash bond prepared for the benefit of the City of Sonoma or a cash deposit shall be submitted to the City of Sonoma by the applicant covering the costs of mitigation trees (and required irrigation) that are to be installed to compensate for impacts. The cash amount to be held by the City of Sonoma shall be determined by a qualified landscape company or landscape architect. The cash or bond shall be held for 24 months and shall be released upon receipt of a report from a qualified arborist or botanist that all planted trees are healthy and established.

The planting plan shall include a planting detail that specifies where all replacement trees would be planted on the project site. The methods used to plant trees shall also be specified. Adequate measures shall be established to minimize predation of planted trees by rodents including, but not limited to, pocket gophers (*Thomomys bottae*) and/or California ground squirrels (*Otospermophilus beechyi*).

All planted trees shall be provided with a temporary irrigation system that would be maintained over a minimum three-year establishment period. The irrigation system shall be placed on electric timers so that trees are automatically watered during the dry months of the establishment

period. At the end of a suitable establishment period, the irrigation system could be removed. At the end of a five-year monitoring period, at least 75 percent of planted trees shall be in good health. If the numbers of planted trees falls below a 75 percent survival rate, additional trees shall be planted to bring the total number of planted trees up to 100 percent of the original number of trees planted. Irrigation and follow-up monitoring shall be established over an additional three year period after any replanting occurs.

Implementation of this mitigation measure would reduce impacts to trees to a level considered less than significant pursuant to the CEQA.

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Figure 1. 19320 Sonoma Highway Project Site
Regional Map
Sonoma, California

County: Sonoma
Map Preparation Date: June 12, 2023

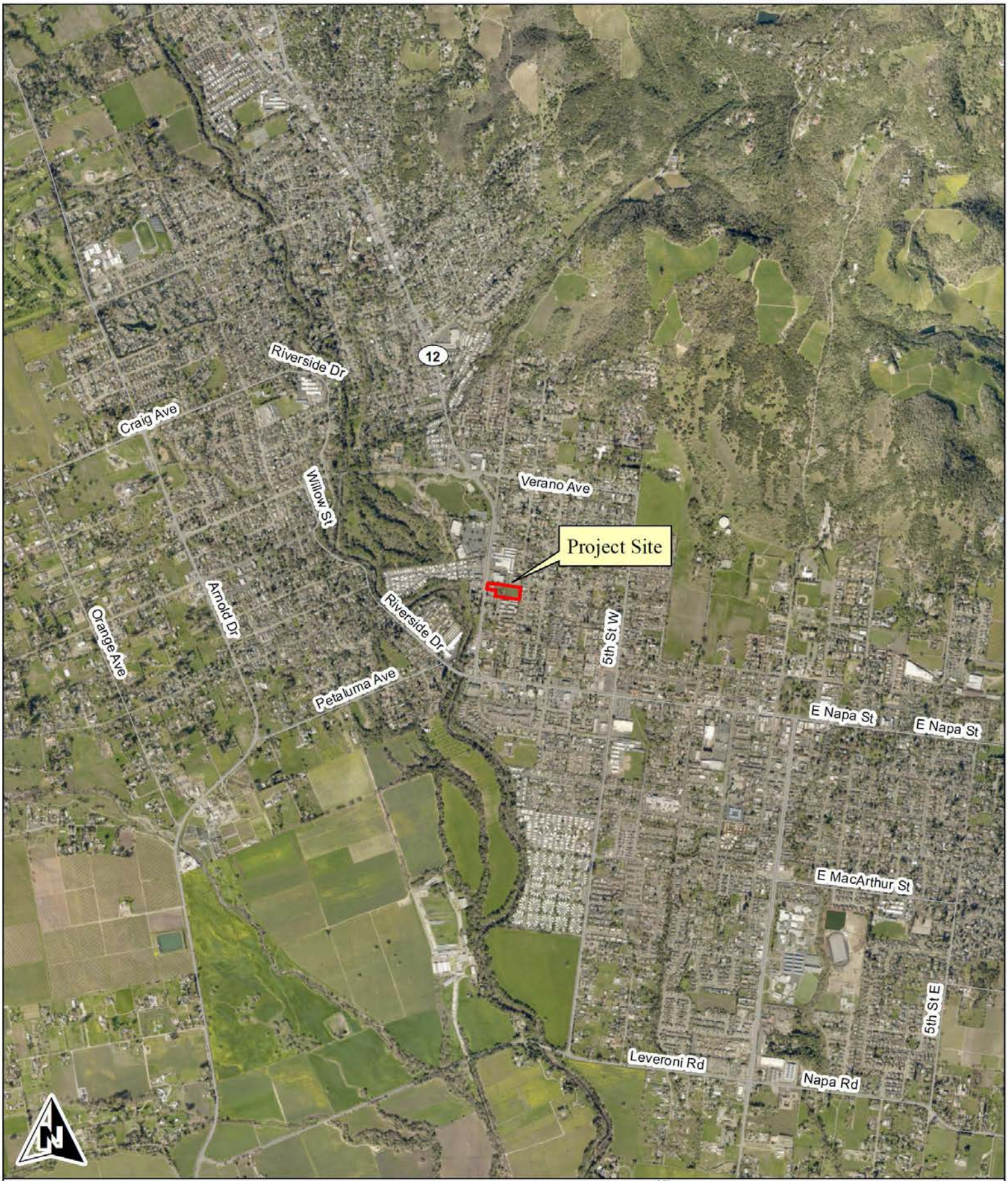

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Figure 2. 19320 Sonoma Highway Project Site
Location Map
Sonoma, California

38.297558 -122.47252
Section: 12; T5N R6W
7.5-Minute Sonoma quadrangle
Aerial Photograph Source: ESRI
Map Preparation Date: June 12, 2023

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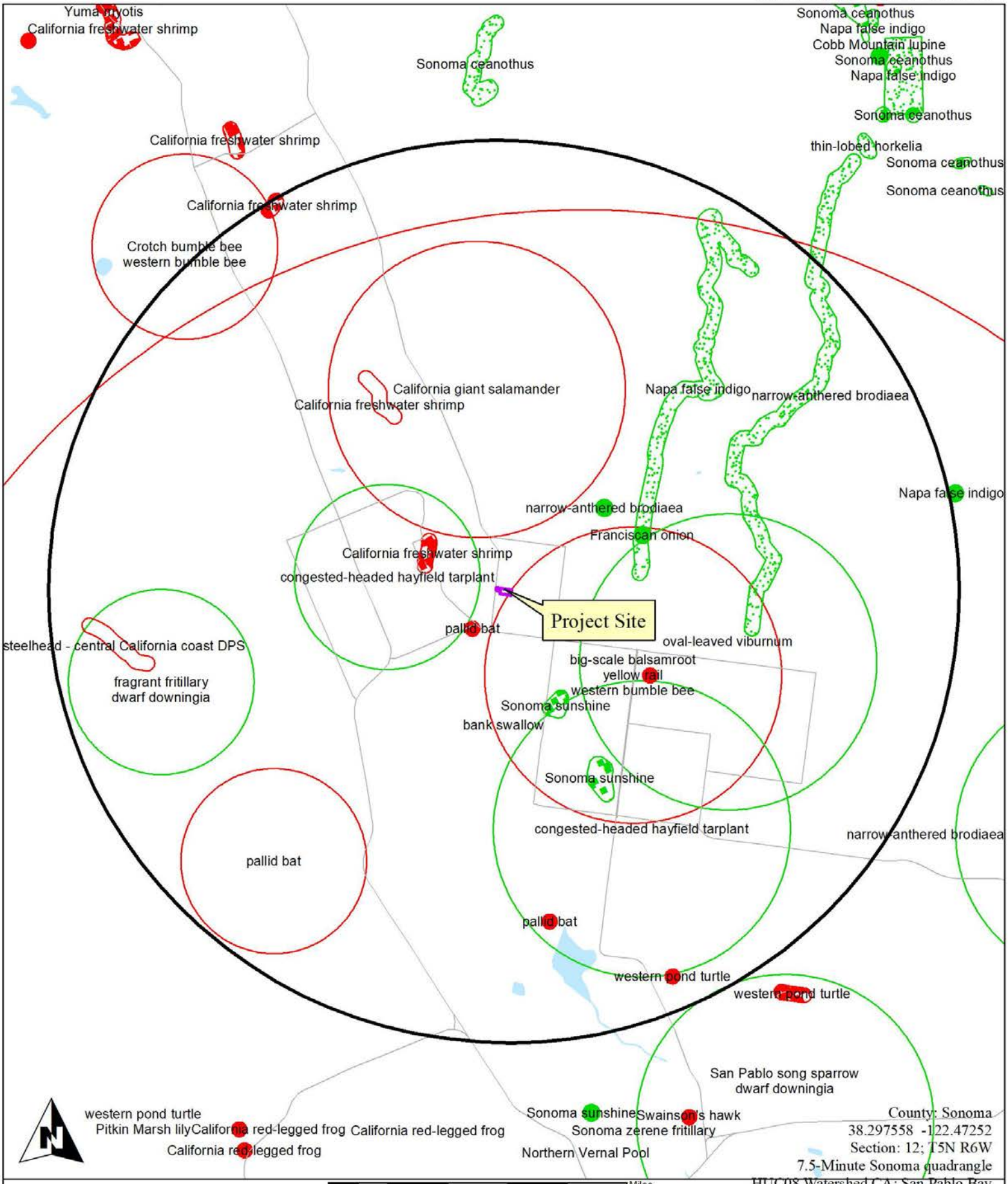
Figure 3. Aerial Photograph of the
19320 Sonoma Highway Project Site
Sonoma, California

Aerial Photograph Source: ESRI
Map Preparation Date: June 12, 2023



County: Sonoma
38.297558 -122.47252
Section: 12; T5N R6W
7.5-Minute Sonoma quadrangle
HUC08 Watershed CA: San Pablo Bay
Topography Source: USGS
Map Preparation Date: June 12, 2023
3-Mile Radius
Source: CDFW, California Natural Diversity Data Base, 2023

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Figure 1. 19320 Sonoma Highway Project Site
Regional Map
Sonoma, California

Table 1

Plant Species Observed on the Montaldo Apartments Project Site

Angiosperms - Dicots

Anacardiaceae

**Pistacia chinensis*	Chinese pistachio

Apiaceae

**Daucus carota*	Queen Anne's lace

Asteraceae

**Hypochaeris radicata*	Rough cat's-ear

Brassicaceae

**Raphanus sativus*	Wild radish

Fagaceae

Quercus agrifolia var. agrifolia	Coast live oak
Quercus kelloggii	California black oak
Quercus lobata	Valley oak

Lamiaceae

**Rosmarinus officinalis*	Rosemary

Lauraceae

**Laurus nobilis*	Bay laurel

Moraceae

**Ficus carica*	Fig

Myrtaceae

**Myrtus communis*	Myrtle

Oleaceae

**Ligustrum lucidum*	Glossy privet

Papaveraceae

Eschscholzia californica	California poppy

Plantaginaceae

**Plantago lanceolata*	English plantain

Rosaceae

**Eriobotrya japonica*	Loquat
**Prunus dulcis*	Almond tree
**Pyrus calleryana*	Callery pear
**Pyrus communis*	Pear
**Rubus armeniacus*	Himalayan blackberry

Angiosperms -Monocots

Amaryllidaceae

**Agapanthus orientalis*	Lilly-of-the-Nile

Poaceae

**Arundo donax*	Giant reed

* Indicates a non-native species

Table 1

Plant Species Observed on the Montaldo Apartments Project Site

**Avena fatua*	Wild oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Hordeum murinum subsp. leporinum*	Hare barley

* Indicates a non-native species

Table 2
Wildlife Species Observed on the Montaldo Apartments Project Site

Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Birds	
California Quail	*Callipepla californica*
Eurasian Collared-Dove	*Streptopelia decaocto*
Anna's Hummingbird	*Calypte anna*
Nuttall's Woodpecker	*Picoides nuttallii*
California Scrub Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Northern Mockingbird	*Mimus polyglottos*
European Starling	*Sturnus vulgaris*
California Towhee	*Melozone crissalis*
Song Sparrow	*Melospiza melodia*
House Finch	*Haemorhous mexicanus*
Mammals	
Black-tailed deer	*Odocoileus hemionus columbianus*

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Montaldo Apartments Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Adoxaceae					
Viburnum ellipticum Western viburnum	Fed: - State: - CNPS: Rank 2B.3	May-July	Chaparral; cismontane woodland; lower montane coniferous forest.	Closest record for this species located approximately 1.6 miles southeast of the project site (Occurrence No. 18).	None. No suitable habitat on the project site. The project site is routinely mowed and is out of the known elevation range of this species. No impacts expected.
Alliaceae					
Allium peninsulare franciscanum Franciscan onion	Fed: - State: - CNPS: Rank 1B.2	May-June	Cismontane woodland; valley and foothill grassland [clay, often serpentine]. 100-300 m.	Closest record for this species located approximately 1.0 miles east of the project site (Occurrence No. 15).	None. No suitable habitat on the project site. No serpentine or clay soils. The project site is routinely mowed and is out of the known elevation range of this species. No impacts expected.
Asteraceae					
Balsamorhiza macrolepis Big-scale balsam-root	Fed: - State: - CNPS: Rank 1B.2	March-June	Cismontane woodland; chaparral; valley and foothill grassland; [sometimes serpentinite]. 90 - 1555 meters	Closest record for this species located approximately 0.8 miles southeast of the project site (Occurrence No. 44).	None. No suitable habitat on the project site. The project site isroutinely mowed and is out of the known elevation range of this species. No impacts expected.
Blennosperma bakeri Sonoma sunshine	Fed: FE State: CE CNPS: Rank 1B.1	February-April	Valley and foothill grassland (mesic); vernal pools.	Closest record for this species located approximately 0.9 miles southeast of the project site (Occurrence No. 3).	None. No suitable habitat on the project site. The project site is routinely mowed. No vernal pools or seasonal wetlands onsite. No impacts expected.
Hemizonia congesta congesta Congested-headed hayfield tarplant	Fed: - State: - CNPS: Rank 1B.2	April-November	Valley and foothill grassland. 20 to 560 meters. Clay soils	Closest record for this species located approximately 0.6 miles west of the project site (Occurrence No. 39).	Very low. This species has been known to sometimes occur on roadsides and in disturbed habitats. This species was not observed during the June 2023 site visit. No impacts expected.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Montaldo Apartments Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Campanulaceae					
Downingia pusilla Dwarf downingia	Fed: - State: - CNPS: Rank 2.2	March-May	Valley and foothill grassland (mesic); vernal pools.	Closest record for this species located approximately 2.3 miles southwest of the project site (Occurrence No. 133).	None. No suitable habitat on the project site. The project site is routinely mowed. No impacts expected.
Fabaceae					
Amorpha californica napensis Napa false indigo	Fed: - State: - CNPS: Rank 1B.2	April-July	Broadleaved upland forest (openings); chaparral, cismontane woodland. 150-2000 m.	Closest record for this species located approximately 1.0 miles east of the project site (Occurrence No. 7).	None. No suitable habitat on the project site. The project site is routinely mowed. No impacts expected.
Liliaceae					
Fritillaria liliacea Fragrant fritillary	Fed: - State: - CNPS: Rank 1B.2	February-April	Coastal prairie; coastal scrub; valley and foothill grassland; [often serpentinite].	Closest record for this species located approximately 2.3 miles west of the project site (Occurrence No. 73).	None. No suitable habitat on the project site. The project site is routinely mowed. No impacts expected.
Themidaceae					
Brodiaea leptandra Narrow-anthered California brodiaea	Fed: - State: - CNPS: Rank 1B.2	May-July	Broadleafed upland forest; chaparral; cismontane woodland; lower montane coniferous forest; valley and foothill grassland. Elevation 110 - 915 meters.	Closest record for this species located approximately 0.8 miles northeast of the project site (Occurrence No. 32).	None. No suitable habitat on the project site. The project site is routinely mowed and is out of the known elevation range of this species. No impacts expected.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Montaldo Apartments Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Wildlife Species Known to Occur Within 5 Miles of the Montaldo Apartments Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Invertebrates				
California freshwater shrimp *Syncaris pacifica*	Fed: FE State: CE Other:	Endemic to Marin, Napa, and Sonoma counties in low gradient streams with moderate to heavy riparian canopy. Needs shallow pools away from the main stream flow. Prefers undercut banks with exposed roots.	Closest record for this species is from 2004 and is located approximately 0.5 mile west of the project site. (Occurrence No. 19).	None. No aquatic habitat on the project site. No impacts expected.
Insects				
Western bumble bee *Bombus occidentalis*	Fed: State: CC Other:	Confined to high elevation sites and north coast. Inhabits grassland with select food plants: Melilotus, Cirsium, Trifolium, Centaurea, Chrysothamnus, and Eriogonum. Typically nests underground in abandoned rodent burrows or other cavities.	Closest record for this species is from 1958 and is located approximately 0.5 mile south of the project site. (Occurrence No. 170).	Low. Ruderal herbaceous field onsite provides marginally suitable habitat for this species. No rodents or rodent burrows observed onsite during June 2023 site visit. See text.
Crotch bumble bee *Bombus crotchii*	Fed: State: CC Other:	Inhabits grassland and scrub areas, with select food plants: Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum. Nests underground, often in abandoned rodent dens.	Closest record for this species is from 1910 and is located approximately 3.0 mile north of the project site. (Occurrence No. 10).	Low. Ruderal herbaceous field onsite provides marginally suitable habitat and Eschscholzia californica observed onsite is a food plant for this species. No rodents or rodent burrows observed onsite during June 2023 site visit. See text.
Fish				
Steelhead - Central California Coast DPS *Oncorhynchus mykiss irideus*	Fed: FT State: - Other:	From Russian River south to Soquel Creek, and to Pajaro River. Also found in San Francisco & San Pablo Bay Basins. Spawn in clear, cool, well oxygenated streams greater than 18 cm deep.	Closest record for this species is from 2004 and is located approximately 2.5 mile west of the project site. (Occurrence No. 26).	None. No aquatic habitat on the project site. No impacts expected.
Amphibians				
California giant salamander *Dicamptodon ensatus*	Fed: State: CSC Other:	Inhabits wet coastal forests in or near clear, cold permanent and semi-permanent streams and seepages. Found from Santa Cruz County to Mendocino County in two to three isolated regions.	Closest record for this species is from 1911 and is located approximately 1.3 mile north of the project site. (Occurrence No. 224).	None. No suitable habitat on the project site. No impacts expected.

Table 4

Special-Status Wildlife Species Known to Occur Within 5 Miles of the Montaldo Apartments Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Foothill yellow-legged frog ** *Rana boylii*	Fed: -- State: CE Other:	Found in partially shaded, shallow streams with rocky substrates. Requires perenial pools or flowing water. Needs some cobble-sized rocks as a substrate for egg laying. Requires water for 15 weeks for larval transformation.	Closest record for this species is from 2004 and is located approximately 2.5 mile west of the project site. (Occurrence No. 1563).	None. No aquatic habitat on the project site. No impacts expected.
Reptiles				
Western pond turtle *Emys marmorata*	Fed: - State: CSC Other:	Uncommon to common in suitable aquatic habitat throughout CA, west of the Sierra-Cascade crest and absent from desert regions, except the Mojave River. Associated with permanent or nearly permanent water in a wide variety of habitat types.	Closest record for this species is from 2017 and is located approximately 1.2 mile southeast of the project site. (Occurrence No. 1466).	None. No aquatic habitat on the project site, which is surrounded by fencing and dense urban development. No impacts expected.
Birds				
Yellow rail *Coturnicops noveboracensis*	Fed: - State: CSC Other:	Summer resident in eastern Sierra Nevada in Mono County. Fresh-water marshlands.	Closest record for this species is from 1898 and is located approximately 1.1 mile southeast of the project site. (Occurrence No. 10).	None. No suitable habitat on the project site. No impacts expected.
Mammals				
Pallid bat *Antrozous pallidus*	Fed: - State: CSC Other:	Occurs in deserts, grasslands, shrublands, woodlands, and forests. Most common in dry habitats with rocky areas for roosting. Roosts in caves, crevices, mines, and occasionally hollow trees. Night roosts in open areas such as porches and open buildings.	Closest record for this species is from 1999 and is located approximately 0.3 mile southwest of the project site. (Occurrence No. 59).	Very low. Main house onsite has been unoccupied for roughly 2 years and could provide marginally suitable roosting habitat. See text.

Table 4

Special-Status Wildlife Species Known to Occur Within 5 Miles of the Montaldo Apartments Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site

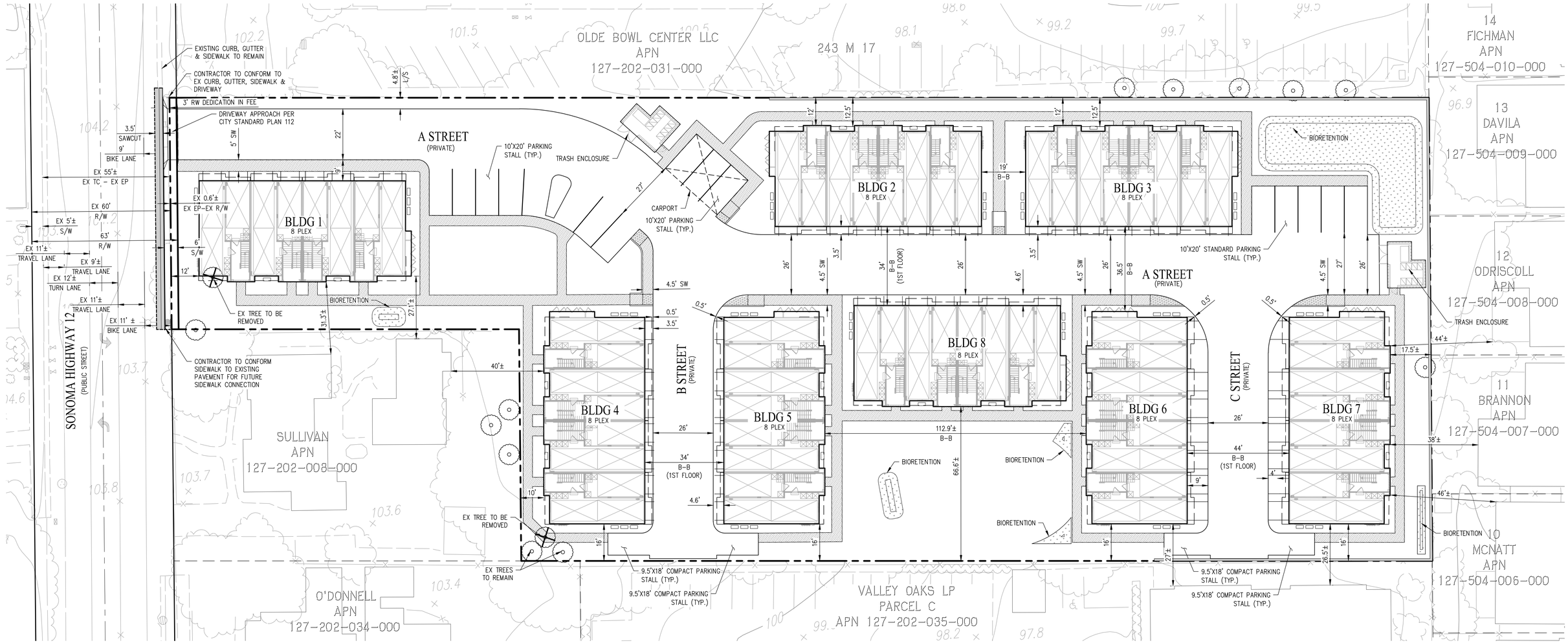
***Status**

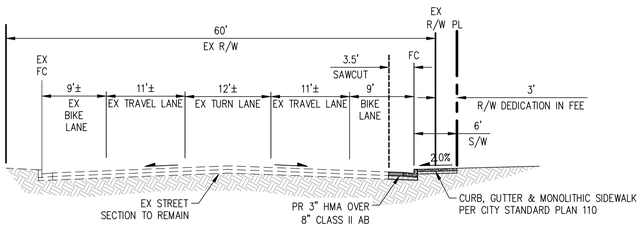
Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
FPD - Federally Proposed for delisting

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate

State:
CSC - California Species of Special Concern
FP - Fully Protected
WL - Watch List. Not protected pursuant to CEQA

** This frog is listed as “endangered” in the east/southern Sierra, west/central, and southern California coasts and “threatened” in the Northern Sierra and Feather River. This frog is not protected pursuant to CESA on the northern coast of California (all counties from Marin and Solano Counties north to Oregon boarder).

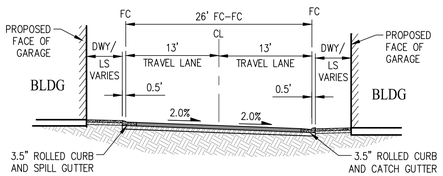




TYPICAL HIGHWAY 12 STREET SECTION

(PUBLIC STREET SECTION PER CITY STANDARD PLAN 102)

NOT TO SCALE



TYPICAL 'B' & 'C' STREET SECTION

NOT TO SCALE

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY BOUNDARY
		RIGHT OF WAY BOUNDARY
		ADJACENT PROPERTY BOUNDARY
		CENTERLINE
		EASEMENT LINE
		FENCE
		SIDEWALK
		BIORETENTION AREA
		2" GRIND AND OVERLAY
		PROPOSED PAVEMENT REPLACEMENT

BW	BACK OF WALK
B/B	BUILDING TO BUILDING
CL	CENTERLINE
EVCS	ELECTRIC VEHICLE CHARGING STATION
EX	EXISTING
FC	FACE OF CURB
L/S	LANDSCAPE
PL	PROPERTY LINE
S/W	SIDEWALK

PRELIMINARY SITE PLAN
64 UNITS
MONTALDO APARTMENTS

CITY OF SONOMA SONOMA COUNTY CALIFORNIA

SCALE: 1" = 20' DATE: FEBRUARY 1, 2023

0 20 40 60

cbg CIVIL ENGINEERS ▪ SURVEYORS ▪ PLANNERS
SAN RAMON ▪ (925) 866-0322
ROSEVILLE ▪ (916) 788-4456
WWW.CBANDG.COM

F:\3412-000\ACAD\EXHIBITS\XB-008_ALT SITE PLAN.DWG

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE INVENTORY REPORT

19320 Sonoma Highway
Sonoma, CA

Prepared for:

DeNova Homes, Inc.
1500 Willow Pass Court
Concord, CA 94520

Prepared by:

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

August 21, 2021

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

August 21, 2021

Kerri Watt
Director of Entitlements
DeNova Homes, Inc.
1500 Willow Pass Court
Concord, CA 94520

Re: Completed *Tree Inventory Report*, 19320 Sonoma Highway, Sonoma, California

Kerri,

Attached you will find our completed *Tree Inventory Report* for the above noted site in Sonoma. A total of 89 trees were evaluated, and this includes all trees that are present over 3 inches in trunk diameter and located in the area of proposed development.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also provides an assessment of expected impact for each tree based on the development plan that was provided, as well as recommendations for preservation or removal. A *Tree Location Plan* shows the location and numbering sequence of all trees. Also included are a *Fencing Detail*, *Tree Preservation Guidelines*, and *Pruning Standards* for your reference.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it is the responsibility of the client to provide that direction.

EXISTING SITE CONDITION SUMMARY

The project site consists of an existing residence with an open field behind it.

EXISTING TREE SUMMARY

Native trees include Coast Live Oak, Black Oak, and Valley Oak.

Non-native trees included Glossy Privet, Grecian Laurel. Flowering Pear, Fig, Chinese Pistache, Japanese Loquat, Xylosma, Plum, and Edible Pear.

CONSTRUCTION IMPACT SUMMARY

The following summary of impacts is provided:

(40 Trees that appear to be preservable

(49) Trees that require removal due to expected construction impacts

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
19320 Highway 12
Sonoma, CA

August 21, 2021

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
1	*Quercus lobata*	Valley Oak	12	25	12	4	3	2	1, 6, 7, 8, 9
2	*Pyrus communis*	Pear	2+4+5+6	12	8	3	3	3	2
3	*Quercus lobata*	Valley Oak	6	25	10	4	3	3	2
4	*Quercus lobata*	Valley Oak	6	18	10	4	3	3	2
5	*Quercus lobata*	Valley Oak	6	25	12	4	3	3	2
6	*Quercus lobata*	Valley Oak	9	18	12	4	3	3	2
7	*Quercus agrifolia*	Coast Live Oak	6+10+10+14+11	30	20	4	2	3	2
8	*Quercus agrifolia*	Coast Live Oak	4	10	10	4	3	3	2
9	*Quercus lobata*	Valley Oak	19	45	24	4	3	3	2
10	*Quercus agrifolia*	Coast Live Oak	5+7+12	14	15	4	3	3	2
11	*Quercus agrifolia*	Coast Live Oak	5	10	10	4	3	3	2
12	*Quercus agrifolia*	Coast Live Oak	5+5+10+11	25	16	4	3	3	2
13	*Quercus lobata*	Valley Oak	16	40	16	4	3	2	1, 6, 7, 8, 9
14	*Quercus agrifolia*	Coast Live Oak	5	14	8	4	3	2	1, 6, 7, 8, 9
15	*Quercus lobata*	Valley Oak	11+12	25	18	4	3	2	1, 6, 7, 8, 9
16	*Quercus lobata*	Valley Oak	11+9	25	18	4	3	2	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
17	*Quercus agrifolia*	Coast Live Oak	4	12	6	4	3	1	1, 6, 7, 8, 9
18	*Quercus lobata*	Valley Oak	18	45	24	4	3	1	1, 6, 7, 8, 9
19	*Eriobotrya japonica*	Japanese Loquat	5x2+4	10	8	4	3	1	1, 6, 7, 8, 9
20	*Quercus agrifolia*	Coast Live Oak	4	21	8	4	3	1	1, 6, 7, 8, 9
21	*Quercus agrifolia*	Coast Live Oak	6	35	12	4	3	1	1, 6, 7, 8, 9
22	*Ligustrum lucidum*	Glossy Privet	6+6	25	10	4	3	1	1, 6, 7, 8, 9
23	*Quercus agrifolia*	Coast Live Oak	6	25	12	4	3	1	1, 6, 7, 8, 9
24	*Quercus lobata*	Valley Oak	48	50	30	3	3	0	1, 6, 7, 8, 9
25	*Xylosma congestum ' Variegata'*	Xylosma (off site)	6+6+7+8	25	14	3	3	0	1, 6, 7, 8, 9
26	*Ligustrum lucidum*	Glossy Privet	5+6+6+8+12	35	12	4	3	3	2
27	*Quercus agrifolia*	Coast Live Oak	15+24	45	24	3	4	3	2
28	*Prunus domestica*	Plum	2+4+5+8	21	12	3	2	2	1, 6, 7, 8, 9
29	*Quercus lobata*	Valley Oak	3+3	15	6	2	3	3	2
30	*Quercus lobata*	Valley Oak	4+5+7	18	12	3	3	3	2
31	*Quercus lobata*	Valley Oak	6+6	25	14	4	3	3	2
32	*Quercus agrifolia*	Coast Live Oak	6+9	25	15	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
33	*Quercus lobata*	Valley Oak	7	20	8	4	3	3	2
34	*Quercus lobata*	Valley Oak	9	18	10	4	3	3	2
35	*Quercus lobata*	Valley Oak	12+18	45	25	3	3	3	2
36	*Quercus agrifolia*	Coast Live Oak	4	12	8	4	3	3	2
37	*Quercus lobata*	Valley Oak	4	8	6	4	3	3	2
38	*Quercus agrifolia*	Coast Live Oak	5	14	10	4	3	3	2
39	*Quercus lobata*	Valley Oak	4+4	16	6	4	3	3	2
40	*Quercus lobata*	Valley Oak	3+4+6	18	8	4	3	3	2
41	*Quercus agrifolia*	Coast Live Oak	6+6+6	30	14	4	3	3	2
42	*Quercus agrifolia*	Coast Live Oak	3+4+6	30	14	4	3	3	2
43	*Quercus agrifolia*	Coast Live Oak	5	12	10	4	3	3	2
44	*Quercus agrifolia*	Coast Live Oak	4	8	8	4	3	3	2
45	*Quercus agrifolia*	Coast Live Oak	8+10	40	16	4	3	3	2
46	*Quercus lobata*	Valley Oak	6	25	12	4	3	3	2
47	*Quercus lobata*	Valley Oak	40	20	12	4	3	0	1, 6, 7, 8, 9
48	*Quercus agrifolia*	Coast Live Oak	13	35	15	4	3	0	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
49	*Quercus lobata*	Valley Oak	26	45	20	4	3	0	1, 6, 7, 8, 9
50	*Quercus agrifolia*	Coast Live Oak	7	20	14	4	3	0	1, 6, 7, 8, 9
51	*Quercus lobata*	Valley Oak	7+8+12+13	40	18	4	3	3	2
52	*Quercus lobata*	Valley Oak	6+12	20	14	4	3	0	1, 6, 7, 8, 9
53	*Quercus lobata*	Valley Oak	16	40	18	4	3	0	1, 6, 7, 8, 9
54	*Quercus agrifolia*	Coast Live Oak	4	10	6	4	3	0	1, 6, 7, 8, 9
55	*Quercus lobata*	Valley Oak	3+4	15	6	4	3	3	2
56	*Quercus agrifolia*	Coast Live Oak	6+8	14	12	4	3	0	1, 6, 7, 8, 9
57	*Quercus lobata*	Valley Oak	1+2+3	12	8	4	3	2	1, 6, 7, 8, 9
58	*Quercus lobata*	Valley Oak	7	14	8	4	3	3	2
59	*Quercus agrifolia*	Coast Live Oak (off site)	14	35	14	4	3	3	2
60	*Quercus lobata*	Valley Oak	12+18	40	18	4	3	3	2
61	*Quercus agrifolia*	Coast Live Oak	4	14	8	4	3	3	2
62	*Pistache chinensis*	Chinese Pistache (off site)	16	45	24	4	3	3	2
63	*Quercus agrifolia*	Coast Live Oak	6+7	14	18	4	3	3	2
64	*Quercus agrifolia*	Coast Live Oak	5	16	10	4	3	3	2

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
65	*Pyrus calleryana*	Flowering Pear (off site)	9	16	12	4	3	1	1, 6, 7, 8, 9
66	*Quercus lobata*	Valley Oak	12+14	45	18	4	3	3	2
67	*Quercus lobata*	Valley Oak	6+8+8	40	16	4	3	3	2
68	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
69	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
70	*Pyrus calleryana*	Flowering Pear (off site)	8	15	10	4	3	1	1, 6, 7, 8, 9
71	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
72	*Quercus agrifolia*	Coast Live Oak	6+6+6+7+7	25	15	4	3	3	2
73	*Quercus agrifolia*	Coast Live Oak	6+6	12	14	4	3	3	2
74	*Quercus lobata*	Valley Oak	14	40	18	4	3	3	2
75	*no tree #75*	X	X	X	X	X	X	X	X
76	*no tree #76*	X	X	X	X	X	X	X	X
77	*no tree #77*	X	X	X	X	X	X	X	X
78	*Quercus agrifolia*	Coast Live Oak	6+8+12	40	21	4	3	1	1, 6, 7, 8, 9
79	*Quercus lobata*	Valley Oak	5+5	35	12	4	3	1	1, 6, 7, 8, 9
80	*Ficus carica*	Fig	multiple	12	12	4	3	1	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1 - 5	Structure 1 - 4	Expected Impact	Recommendations
81	*Quercus kelloggii*	Black Oak (off site)	12+13+13	40	21	4	3	1	1, 6, 7, 8, 9
82	*Quercus lobata*	Valley Oak	6	21	8	2	3	1	1, 6, 7, 8, 9
83	*Quercus agrifolia*	Coast Live Oak	7+4	30	12	4	3	1	1, 6, 7, 8, 9
84	*Quercus lobata*	Valley Oak	32	45	30	4	3	1	1, 6, 7, 8, 9
85	*Quercus agrifolia*	Coast Live Oak	5+5+14	30	18	4	3	1	1, 6, 7, 8, 9
86	*Quercus agrifolia*	Coast Live Oak (off site)	20	40	25	4	3	1	1, 6, 7, 8, 9
87	*Quercus agrifolia*	Coast Live Oak (off site)	15	40	20	4	3	1	1, 6, 7, 8, 9
88	*Quercus lobata*	Valley Oak	13	40	18	4	3	3	2
89	*Laurus nobilis*	Grecian Laurel	multiple	16	8	4	3	3	2
90	*Quercus lobata*	Valley Oak	5	30	8	3	3	3	2
91	*Quercus agrifolia*	Coast Live Oak	5+12+12	30	15	4	3	3	2
92	*Quercus lobata*	Valley Oak (off site)	12	40	18	4	3	1	1, 6, 7, 8, 9

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

Tree Number

Each tree has been identified by number on the *Tree Location Plan* showing the location of each tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been documented to the nearest inch, to illustrate its diameter at 4.5 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although

cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Tree Protection Zone (TPZ)

The area to be protected by temporary fencing during construction. Represented by 1 foot of radius for each inch of trunk diameter measured at 4.5 feet above adjacent grade.

Development Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected based on distance away from proposed construction activity.

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible.

(2) Removal is required due to significant development impacts.

(3) Removal is recommended due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing health or structure.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the Tree Protection Zone (TPZ), or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the TPZ. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced TPZ prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean, raise, or provide necessary clearance. Prune to reduce branches that are over-loaded, over-extended, largely horizontal, arching, or have foliage concentrated near the branch ends, per International Society of Arboriculture Pruning Standards.

Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture. Pruning Standards are attached to this report.

(10) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

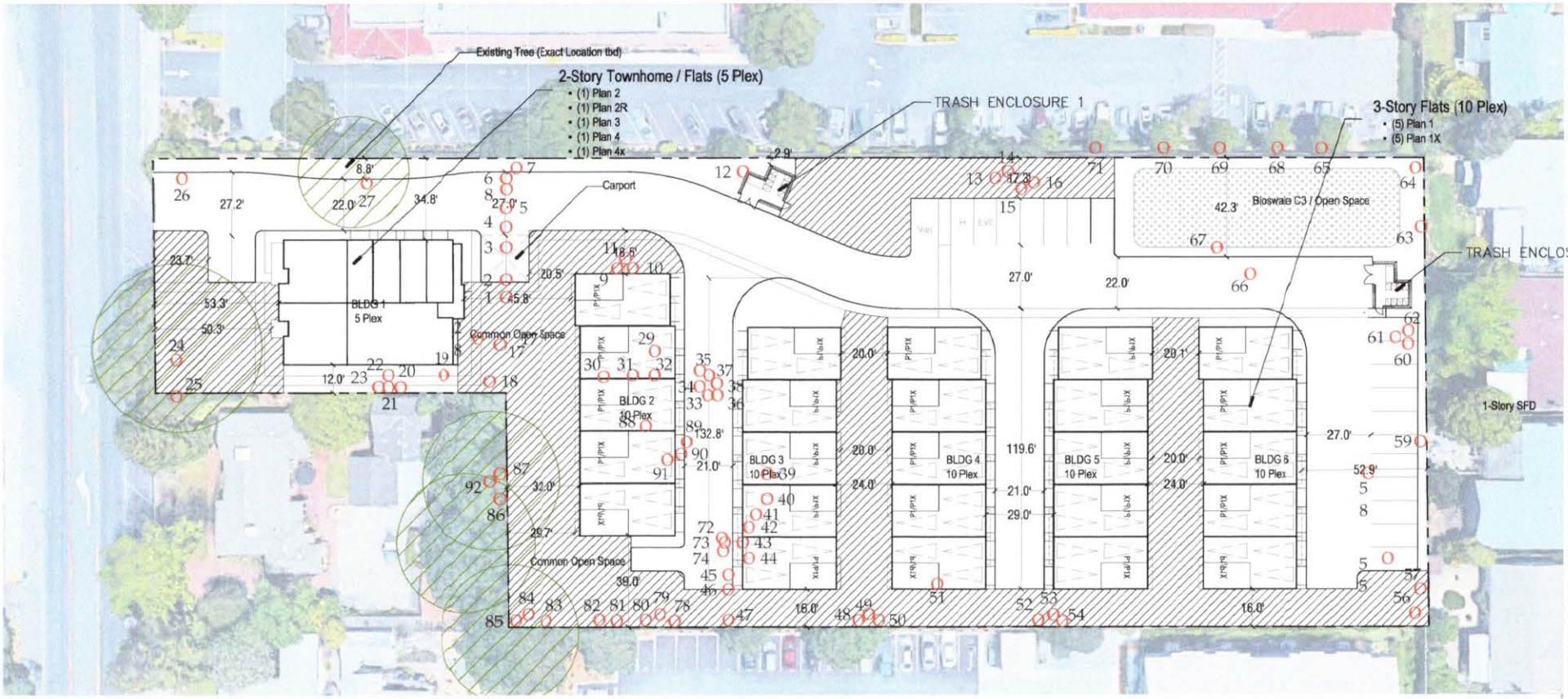
All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

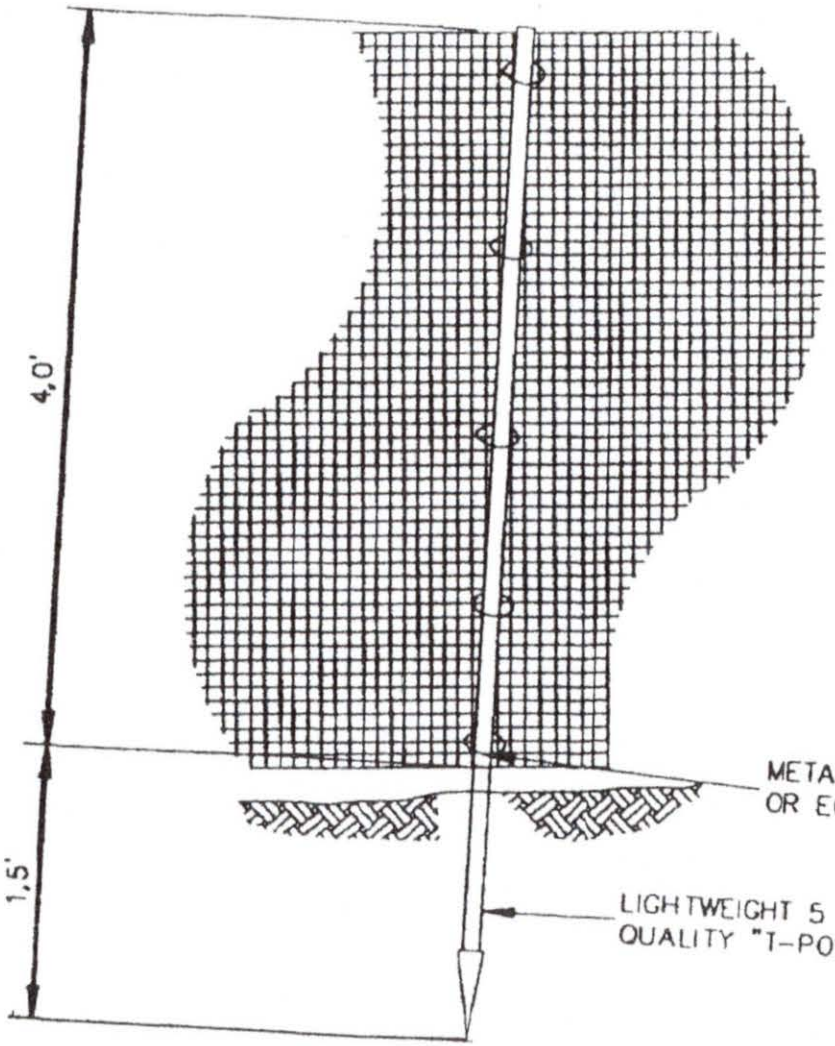
If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether excavation is required, when, and how.

TREE LOCATION PLAN



TREE LOCATION AND NUMBERING PLAN
19320 SONOMA HIGHWAY
SONOMA, CA

TREE FENCING DETAIL



NOTE:
TENSOR LIGHTWEIGHT SAFTY GRID, ORANGE COLOR, BX226516, CUT OR FOLD AT POSTS AS NEEDED TO CONFORM TO SLOPING TERRAIN.

TREE PROTECTION FENCING DETAIL

TREE PRESERVATION GUIDELINES

TREE PRESERVATION GUIDELINES

INTRODUCTION

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at this site require specialized protection techniques during all construction activities to minimize negative impact on their long term health and vigor. The area immediately beneath and around canopy driplines is especially critical, and the specifications that follow are established to protect short and long term tree integrity. The purpose of this specification is therefore to define the procedures that must be followed during any and all phases of development in the immediate vicinity of designated protected trees.

Established, mature trees respond in a number of different ways to the disruption of their natural conditions. Change of grade within the root system area or near the root collar, damage to the bark of the trunk, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual impacts of these activities may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the decline process takes many years, with symptoms appearing slowly and over a period of time. Trees may not begin to show obvious signs of decline from the negative impacts of construction until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long-term health of all protected trees that a defined protection program be established before beginning any construction activity where protected trees are found. Once incorporated at the design level, it is mandatory that developers, contractors, and construction personnel understand the critical importance of these guidelines, and the potential penalties that will be levied if they are not fully incorporated at every stage of development.

The following specifications are meant to be utilized by project managers and those supervising any construction in the vicinity of protected trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. Questions which arise, or interpretation of specifications as they apply to specific site activities, must be referred to the project arborist as they occur.

Horticultural Associates
P.O. Box 1261
Glen Ellen, CA 95442
707-935-3911

TREE PROTECTION ZONE

1. The canopy dripline is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing.

2. No encroachment into the dripline is allowed at any time without approval from the project arborist, and unauthorized entry may be subject to civil action and penalties.

3. The dripline will be designated by the project arborist at a location determined to be adequate to ensure long term tree viability and health. This is to occur prior to installation of fencing and in conjunction with the fencing contractor

TREE PROTECTION FENCING

1. Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing shall be installed at each site tree, or group of trees. Fencing shall be located at the dripline designated by the project arborist and generally illustrated on the Improvement Plans.

2. Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing such as *Tensar* plastic fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable, however.

3. Fencing shall be installed tightly between steel fence posts (standard quality farm 'T' posts work well) placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties, metal tie wire, or flip ties. See attached fencing detail.

4. Fencing shall serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.

5. All encroachment into the fenced dripline must be approved and supervised by the project arborist. Approved dripline encroachment may require

additional mitigation or protection measures that will be determined by the project arborist at the time of the request.

6. Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

7. Fencing shall be upright and functional at all times from start to completion of project. Fencing shall remain in place and not be moved or removed until all construction activities at the site are completed.

TREE PRUNING AND TREATMENTS

1. All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.

2. All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur by, or under the direct supervision of, an arborist certified by the International Society of Arboriculture.

GRADING AND TRENCHING

1. Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non conformance may generate stop-work orders.

2. The designated dripline is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

3. Trenching should be routed around the dripline. Where trenching has been designated within the dripline, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

4. All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or during any grading activity. The tearing of roots by equipment shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

5. Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

6. Retaining walls are effective at holding grade changes outside the area of the dripline and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within a dripline.

7. Grade changes outside the dripline, or those necessary in conjunction with retaining walls, shall be designed so that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

8. Grade reduction within the designated dripline shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

9. Foundations of all types within the dripline shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures. Building footprints should generally be outside the dripline whenever possible.

DRAINAGE

The location and density of native trees may be directly associated with the presence of naturally occurring water, especially ephemeral waterways. Project design, especially drainage components, should take into consideration that these trees may begin a slow decline if this naturally present association with water is changed or eliminated.

TREE DAMAGE

1. Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

2. Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected.

3. Any tree that is significantly damaged and whose survivability is threatened, due to negligence by any contractor, shall be appraised using the Trunk Formula Method provided in the 9th Edition of the Guide For Plant Appraisal. This appraisal value will be the basis for any fines levied on the offending contractor.

MULCHING

1. Trees will benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the Tree Protection Zone. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, dyed bark, or chipped lumber will not function as beneficially. All trees that are expected to be

impacted in any way by project activities shall have mulch placed prior to the installation of protection fencing.

2. Mulch should be generated from existing site trees that are removed or pruned as part of the project. Much brought onto the site from an outside source must be from trees that are verified to be free of the Sudden Oak Death pathogen *Phytophtora ramorum*.

PRUNING STANDARDS

WESTERN CHAPTER

ISA

PRUNING STANDARDS

Purpose:

Trees and other woody plants respond in specific and predictable ways to pruning and other maintenance practices. Careful study of these responses has led to pruning practices which best preserve and enhance the beauty, structural integrity, and functional value of trees.

In an effort to promote practices which encourage the preservation of tree structure and health, the W.C. ISA Certification Committee has established the following Standards of Pruning for Certified Arborists. The Standards are presented as working guidelines, recognizing that trees are individually unique in form and structure, and that their pruning needs may not always fit strict rules. The Certified Arborist must take responsibility for special pruning practices that vary greatly from these Standards.

I. Pruning Techniques

A. A thinning cut removes a branch at its point of attachment or shortens it to a lateral large enough to assume the terminal role. Thinning opens up a tree, reduces weight on heavy limbs, can reduce a tree's height, distributes ensuing invigoration throughout a tree and helps retain the tree's natural shape. Thinning cuts are therefore preferred in tree pruning.

When shortening a branch or leader, the lateral to which it is cut should be at least one-half the diameter of the cut being made. Removal of a branch or leader back to a sufficiently large lateral is often called "drop crotching."

B. A heading cut removes a branch to a stub, a bud or a lateral branch not large enough to assume the terminal role. Heading cuts should seldom be used because vigorous, weakly attached upright sprouts are forced just below such cuts, and the tree's natural form is altered. In some situations, branch stubs die or produce only weak sprouts.

C. When removing a live branch, pruning cuts should be made in branch tissue just outside the branch bark ridge and collar, which are trunk tissue. *(Figure 1)* If no collar is visible, the angle of the cut should approximate the angle formed by the branch bark ridge and the trunk. *(Figure 2)*

D. When removing a dead branch, the final cut should be made outside the collar of live callus tissue. If the collar has grown out along the branch stub, only the dead stub should be removed, the live collar should remain intact, and uninjured. *(Figure 3)*

E. When reducing the length of a branch or the height of a leader, the final cut should be made just beyond (without violating) the branch bark ridge of the branch being cut to. The cut should approximately bisect the angle formed by the branch bark ridge and an imaginary line perpendicular to the trunk or branch cut. *(Figure 4)*

F. A goal of structural pruning is to maintain the size of lateral branches to less than three-fourths the diameter of the parent branch or trunk. If the branch is codominant or close to the size of the parent branch, thin the branch's foliage by 15% to 25%, particularly near the terminal. Thin the parent branch less, if at all. This will allow the parent branch to grow at a faster rate, will reduce the weight of the lateral branch, slow its total growth, and develop a stronger branch attachment. If this does not appear appropriate, the branch should be completely removed or shortened to a large lateral. *(Figure 5)*

G. On large-growing trees, except whorl-branching conifers, branches that are more than one-third the diameter of the trunk should be spaced along the trunk at least 18 inches apart, on center. If this is not possible because of the present size of the tree, such branches should have their foliage thinned 15% to 25%, particularly near their terminals. *(Figure 6)*

H. Pruning cuts should be clean and smooth with the bark at the edge of the cut firmly attached to the wood.

I. Large or heavy branches that cannot be thrown clear, should be lowered on ropes to prevent injury to the tree or other property.

J. Wound dressings and tree paints have not been shown to be effective in preventing or reducing decay. They are therefore not recommended for routine use when pruning.

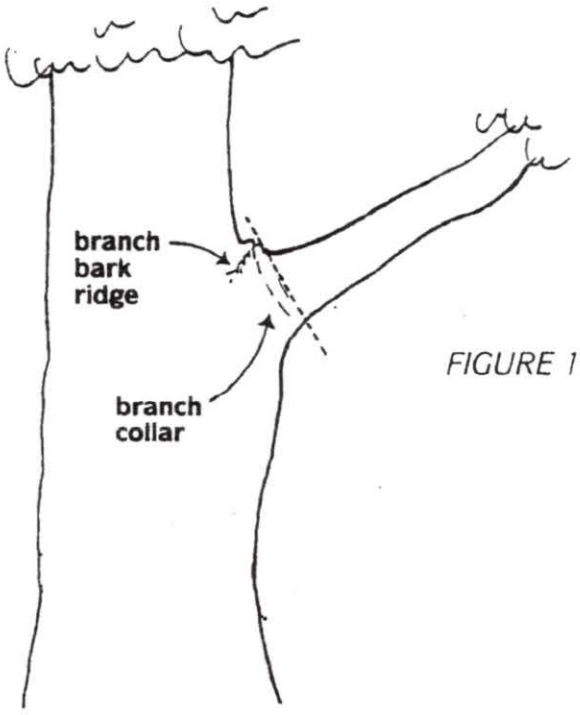


FIGURE 1. When removing a branch, the final cut should be just outside the branch bark ridge and collar.

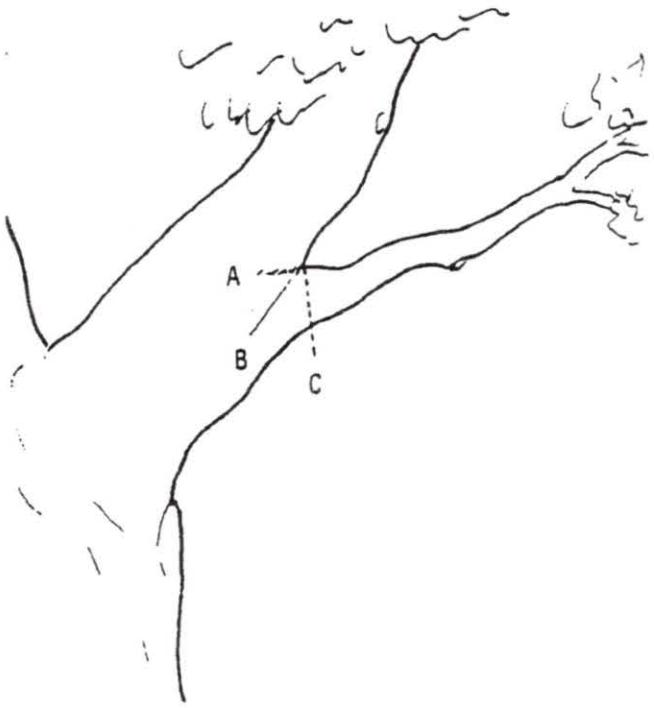


FIGURE 2. In removing a limb without a branch collar, the angle of the final cut to the branch bark ridge should approximate the angle the branch bark ridge forms with the limb. Angle AB should equal Angle BC.

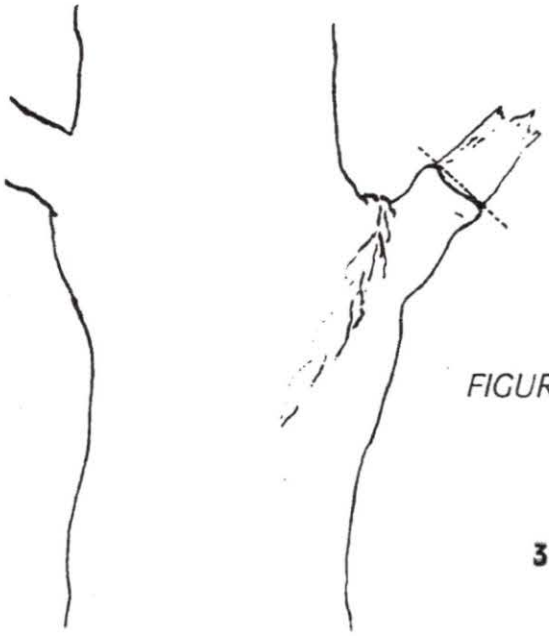


FIGURE 3. When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.

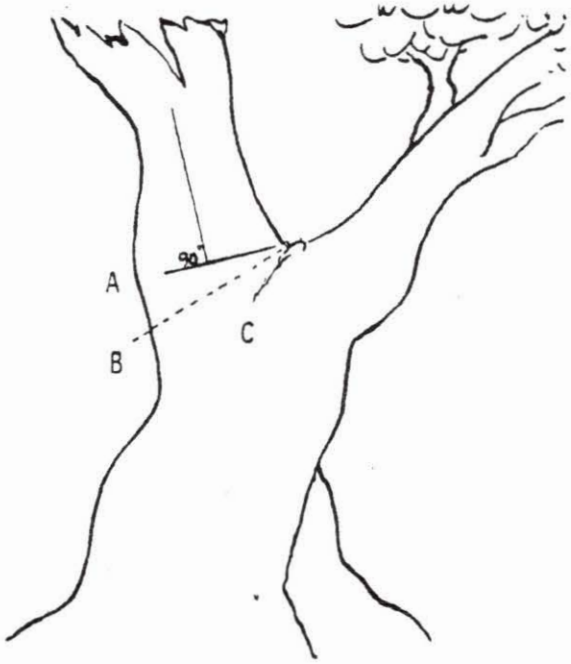


FIGURE 4. *In removing the end of a limb to a large lateral branch, the final cut is made along a line that bisects the angle between the branch bark ridge and a line perpendicular to the limb being removed. Angle AB is equal to Angle BC.*

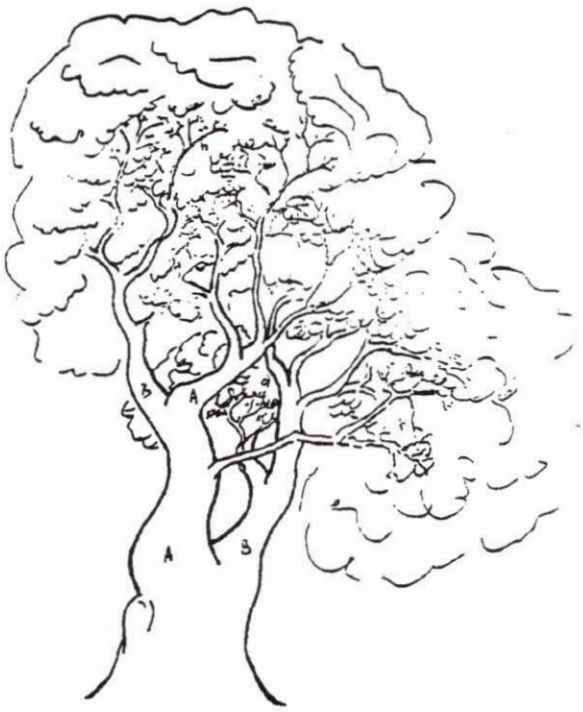


FIGURE 5. *A tree with limbs tending to be equal-sized, or codominant. Limbs marked B are greater than ¾ the size of the parent limb A. Thin the foliage of branch B more than branch A to slow its growth and develop a stronger branch attachment.*

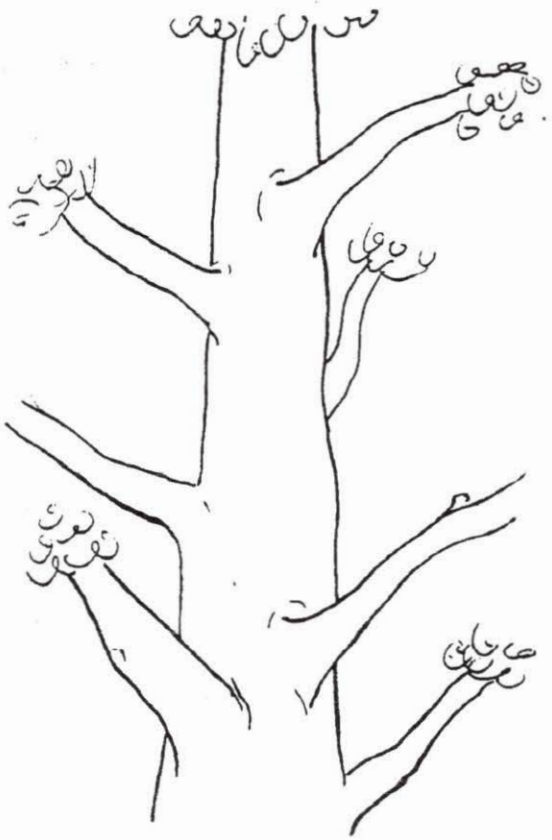


FIGURE 6. *Major branches should be well spaced both along and around the stem.*

II. Types of Pruning — Mature Trees

A. CROWN CLEANING

Crown cleaning or cleaning out is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches and watersprouts from a tree crown.

B. CROWN THINNING

Crown thinning includes crown cleaning and the selective removal of branches to increase light penetration and air movement into the crown. Increased light and air stimulates and maintains interior foliage, which in turn improves branch taper and strength. Thinning reduces the wind-sail effect of the crown and the weight of heavy limbs. Thinning the crown can emphasize the structural beauty of trunk and branches as well as improve the growth of plants beneath the tree by increasing light penetration. When thinning the crown of mature trees, seldom should more than one-third of the live foliage be removed.

At least one-half of the foliage should be on branches that arise in the lower two-thirds of the trees. Likewise, when thinning laterals from a limb, an effort should be made to retain inner lateral branches and leave the same distribution of foliage along the branch. Trees and branches so pruned will have stress more evenly distributed throughout the tree or along a branch.

An effect known as "lion's-tailing" results from pruning out the inside lateral branches. Lion's-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water-sprouts, weakened branch structure and limb breakage.

C. CROWN REDUCTION

Crown reduction is used to reduce the height and/or spread of a tree. Thinning cuts are most effective in maintaining the structural integrity and natural form of a tree and in delaying the time when it will need to be pruned again. The lateral to which a branch or trunk is cut should be at least one-half the diameter of the cut being made.

D. CROWN RESTORATION

Crown restoration can improve the structure and appearance of trees that have been topped or severely pruned using heading cuts. One to three sprouts on main branch stubs should be selected to reform a more natural appearing crown. Selected vigorous sprouts may need to be thinned to a lateral, or even headed, to control length growth in order to ensure adequate attachment for the size of the sprout. Restoration may require several prunings over a number of years.

II. Types of Pruning — Mature Trees *(continued)*

E. CROWN RAISING

Crown raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas. It is important that a tree have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within a tree.

When pruning for view, it is preferable to develop "windows" through the foliage of the tree, rather than to severely raise or reduce the crown.

III. Size of Pruning Cuts

Each of the Pruning Techniques (Section I) and Types of Pruning (Section II) can be done to different levels of detail or refinement. The removal of many small branches rather than a few large branches will require more time, but will produce a less-pruned appearance, will force fewer watersprouts and will help to maintain the vitality and structure of the tree. Designating the maximum size (base diameter) that any occasional undesirable branch may be left within the tree crown, such as ½", 1" or 2" branch diameter, will establish the degree of pruning desired.

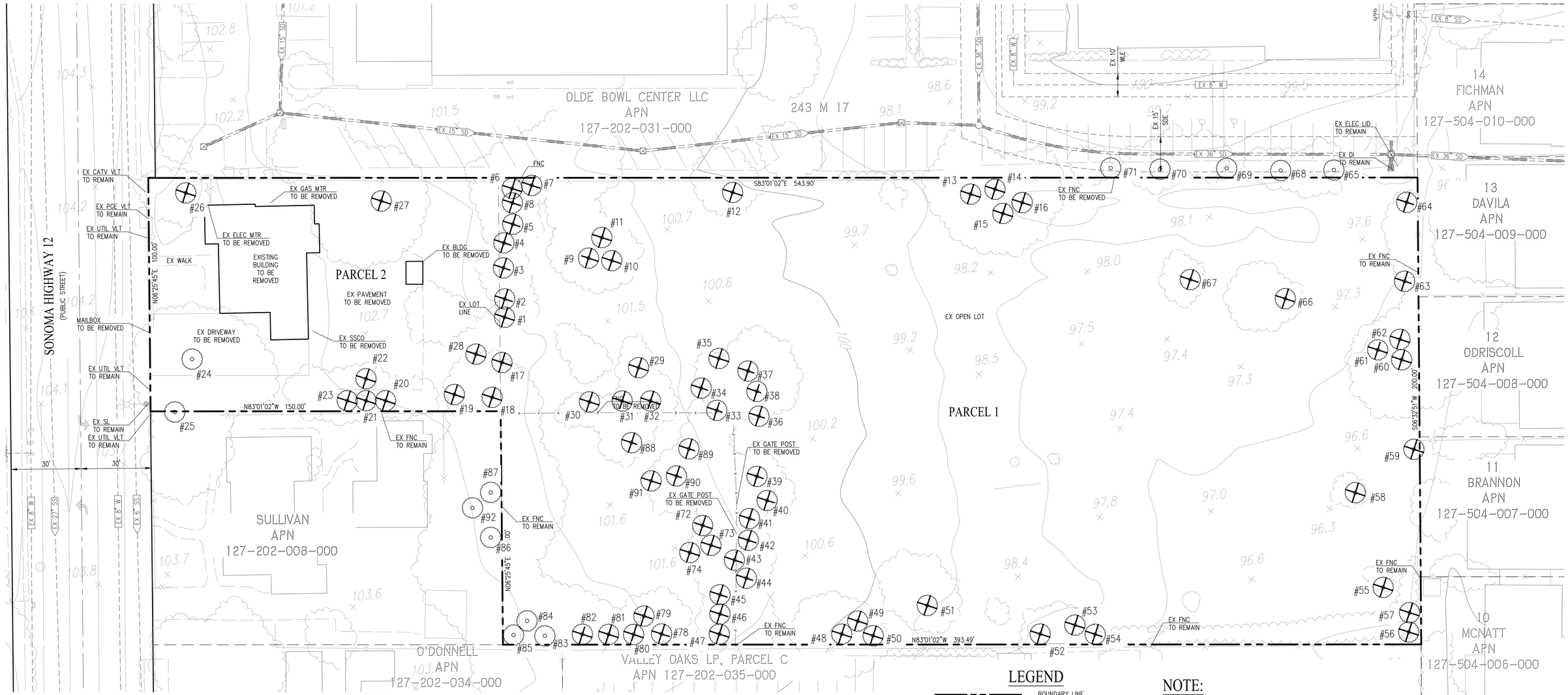
IV. Climbing Techniques

A. Climbing and pruning practices should not injure the tree except for the pruning cuts.

B. Climbing spurs or gaffs should not be used when pruning a tree, unless the branches are more than throw-line distance apart. In such cases, the spurs should be removed once the climber is tied in.

C. Spurs may be used to reach an injured climber and when removing a tree.

D. Rope injury to thin barked trees from loading out heavy limbs should be avoided by installing a block in the tree to carry the load. This technique may also be used to reduce injury to a crotch from the climber's line.



TREE NO.	DBH (IN)	SPECIES	PROPOSED ACTION
1	12.0	VALLEY OAK	REMOVE
2	6	PEAR	REMOVE
3	6.0	VALLEY OAK	REMOVE
4	6	VALLEY OAK	REMOVE
5	6	VALLEY OAK	REMOVE
6	9	VALLEY OAK	REMOVE
7	14.0	COAST LIVE OAK	REMOVE
8	4.0	COAST LIVE OAK	REMOVE
9	19	COAST LIVE OAK	REMOVE
10	12.0	COAST LIVE OAK	REMOVE
11	5	COAST LIVE OAK	REMOVE
12	11	LONDON PLANE	REMOVE
13	16	VALLEY OAK	REMOVE
14	5	COAST LIVE OAK	REMOVE
15	12.0	VALLEY OAK	REMOVE
16	11.0	VALLEY OAK	REMOVE
17	4.0	COAST LIVE OAK	REMOVE
18	18.0	VALLEY OAK	REMOVE
19	5.0	JAPANESE LOQUAT	REMOVE
20	4.0	COAST LIVE OAK	REMOVE
21	6.0	COAST LIVE OAK	REMOVE
22	6.0	GLOSSY PRIVET	REMOVE
23	6	COAST LIVE OAK	REMOVE
24	48	VALLEY OAK	REMAIN

TREE NO.	DBH (IN)	SPECIES	PROPOSED ACTION
25	8	XYLOSMA	REMAIN
26	12	GLOSSY PRIVET	REMOVE
27	24	COAST LIVE OAK	REMOVE
28	8	PLUM	REMOVE
29	3	VALLEY OAK	REMOVE
30	7	VALLEY OAK	REMOVE
31	6	VALLEY OAK	REMOVE
32	9	COAST LIVE OAK	REMOVE
33	7	VALLEY OAK	REMOVE
34	9	VALLEY OAK	REMOVE
35	18	VALLEY OAK	REMOVE
36	4	COAST LIVE OAK	REMOVE
37	4	VALLEY OAK	REMOVE
38	5	COAST LIVE OAK	REMOVE
39	4	VALLEY OAK	REMOVE
40	6	VALLEY OAK	REMOVE
41	6	COAST LIVE OAK	REMOVE
42	6	COAST LIVE OAK	REMOVE
43	5	COAST LIVE OAK	REMOVE
44	4	COAST LIVE OAK	REMOVE
45	10	COAST LIVE OAK	REMOVE
46	6	VALLEY OAK	REMOVE
47	40	VALLEY OAK	REMOVE
48	13	COAST LIVE OAK	REMOVE

TREE NO.	DBH (IN)	SPECIES	PROPOSED ACTION
49	26	VALLEY OAK	REMOVE
50	7	COAST LIVE OAK	REMOVE
51	13	VALLEY OAK	REMOVE
52	12	VALLEY OAK	REMOVE
53	16	VALLEY OAK	REMOVE
54	4	COAST LIVE OAK	REMOVE
55	4	VALLEY OAK	REMOVE
56	8	COAST LIVE OAK	REMOVE
57	3	VALLEY OAK	REMOVE
58	7	VALLEY OAK	REMOVE
59	14	COAST LIVE OAK	REMOVE
60	18	VALLEY OAK	REMOVE
61	4	COAST LIVE OAK	REMOVE
62	16	CHINESE PISTACHE	REMOVE
63	7	COAST LIVE OAK	REMOVE
64	5	COAST LIVE OAK	REMOVE
65	9	FLOWERING PEAR	REMAIN
66	14	VALLEY OAK	REMOVE
67	8	VALLEY OAK	REMOVE
68	6	FLOWERING PEAR	REMAIN
69	6	FLOWERING PEAR	REMAIN
70	8	FLOWERING PEAR	REMAIN
71	6	FLOWERING PEAR	REMAIN
72	7	COAST LIVE OAK	REMOVE

TREE NO.	DBH (IN)	SPECIES	PROPOSED ACTION
73	6	COAST LIVE OAK	REMOVE
74	14	VALLEY OAK	REMOVE
75	N/A	N/A	N/A
76	N/A	N/A	N/A
77	N/A	N/A	N/A
78	12	COAST LIVE OAK	REMOVE
79	5	VALLEY OAK	REMOVE
80	12	FIG	REMOVE
81	13	BLACK OAK	REMOVE
82	6	VALLEY OAK	REMOVE
83	7	COAST LIVE OAK	REMAIN
84	32	VALLEY OAK	REMAIN
85	14	COAST LIVE OAK	REMAIN
86	20	COAST LIVE OAK	REMAIN
87	15	COAST LIVE OAK	REMAIN
88	13	VALLEY OAK	REMOVE
89	8	GRECIAN LAUREL	REMOVE
90	5	VALLEY OAK	REMOVE
91	12	COAST LIVE OAK	REMOVE
92	12	VALLEY OAK	REMAIN

NOTE:
TREE LOCATIONS SUBJECT TO FIELD SURVEY VERIFICATION.

LEGEND

	BOUNDARY LINE
	CENTERLINE
	EASEMENT LINE
	ADJACENT LINE
x x x	FENCE LINE
#7	EXISTING TREE TO REMAIN
	EXISTING TREE TO BE REMOVED
BLDG	BUILDING
DI	DRAIN INLET
ELEC	ELECTRIC
FNC	FENCE
MTR	METER
PL	PROPERTY LINE
OH	OVERHANG
SL	STREET LIGHT
SDE	STORM DRAIN EASEMENT
UTIL	UTILITY
VLT	VAULT
WLE	WATER LINE EASEMENT

NOTE:

1. SEE TREE INVENTORY REPORT PREPARED BY HORTICULTURAL ASSOCIATES DATED AUGUST 21, 2021 FOR TREE INVENTORY DETAILS.
2. ALL EXISTING ONSITE UTILITIES AND IMPROVEMENTS ARE TO BE REMOVED UNLESS OTHERWISE NOTED.
3. ALL EXISTING TREES LOCATED ON PROPERTY ARE TO BE REMOVED UNLESS OTHERWISE NOTED. TREE LOCATIONS TO BE FIELD VERIFIED.
4. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE BASED ON FIELD AND RECORD INFORMATION. FINAL UTILITY LOCATIONS AND DEPTHS ARE SUBJECT TO USA MARKINGS VERIFICATION AND POTHOLE INVESTIGATIONS.
5. PROPOSED JOINT TRENCH RELOCATION SUBJECT TO FINAL PG&E APPROVAL.
6. EXISTING WATER SERVICE AND SANITARY SERVICE LOCATIONS ARE UNKNOWN.

EXISTING CONDITIONS

MONTALDO APARTMENTS

CITY OF SONOMA SONOMA COUNTY CALIFORNIA

0 20 40 60
SCALE: 1" = 20'

DATE: JULY 13, 2022

cbg
CIVIL ENGINEERS ▪ SURVEYORS ▪ PLANNERS
SAN RAMON ▪ (925) 866-0322
ROSEVILLE ▪ (916) 788-4456
WWW.CBANDG.COM

SHEET NO.
C 2.0
OF 7 SHEETS

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HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

December 5, 2023

Kerri Watt
Director of Entitlements
DeNova Homes, Inc.
1500 Willow Pass Court
Concord, CA 94520

Re: Updated *Tree Inventory Report*, 19320 Sonoma Highway, Sonoma, California

Kerri,

Attached you will find our updated *Tree Inventory Report* for the above noted site in Sonoma. A total of 93 trees were evaluated, and this includes all trees that are present over 3 inches in trunk diameter and located in the area of proposed development. This report is based on a revised development plan that is different than the one originally evaluated.

All trees in this report were evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also provides an assessment of expected impact for each tree based on the development plan that was provided, as well as recommendations for preservation or removal. A *Tree Location Plan* shows the location and numbering sequence of all trees. Also included are a *Fencing Detail, Tree Preservation Guidelines*, and *Pruning Standards* for your reference.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred on any tree, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. No other trees are included in this report. If other trees need to be included it is the responsibility of the client to provide that direction.

EXISTING SITE CONDITION SUMMARY

The project site consists of an existing residence with an open field behind it.

~ Voice 707-935-3911 Fax 707-935-7103 ~

EXISTING TREE SUMMARY

Native trees include Coast Live Oak, Black Oak, and Valley Oak.

Non-native trees included Glossy Privet, Grecian Laurel. Flowering Pear, Fig, Chinese Pistache, Japanese Loquat, Xylosma, Plum, and Edible Pear.

CONSTRUCTION IMPACT SUMMARY

The following summary of impacts is provided:

(26) Trees that appear to be preservable

(67) Trees that require removal due to expected construction impacts

(3) Missing numbers

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards,

John C. Meserve
ISA Certified Arborist, WE #0478A
ISA Qualified Tree Risk Assessor/TRAQ
ASCA Qualified Tree and Plant Appraiser/TPAQ

TREE INVENTORY CHART

TREE INVENTORY
19320 Highway 12
Sonoma, CA

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
1	*Quercus lobata*	Valley Oak	12	25	12	4	3	3	2
2	*Pyrus communis*	Pear	2+4+5+6	12	8	3	3	3	2
3	*Quercus lobata*	Valley Oak	6	25	10	4	3	3	2
4	*Quercus lobata*	Valley Oak	6	18	10	4	3	3	2
5	*Quercus lobata*	Valley Oak	7	25	12	4	3	3	2
6	*Quercus lobata*	Valley Oak	11	18	12	4	3	3	2
7	*Quercus agrifolia*	Coast Live Oak	6+10+10+14+11	30	20	4	2	2	1, 6, 7, 8, 9
8	*Quercus agrifolia*	Coast Live Oak	4	10	10	4	3	3	2
9	*Quercus lobata*	Valley Oak	19	45	24	4	3	3	2
10	*Quercus agrifolia*	Coast Live Oak	5+7+12	14	15	4	3	3	2
11	*Quercus agrifolia*	Coast Live Oak	5	10	10	4	3	3	2
12	*Quercus agrifolia*	Coast Live Oak	5+5+10+11	25	16	4	3	3	2
13	*Quercus lobata*	Valley Oak	16	40	16	4	3	3	2
14	*Quercus agrifolia*	Coast Live Oak	5	14	8	4	3	2	1, 6, 7, 8, 9
15	*Quercus lobata*	Valley Oak	11+12	25	18	4	2	3	2
16	*Quercus lobata*	Valley Oak	11+9	25	18	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
17	*Quercus agrifolia*	Coast Live Oak	4	12	6	4	3	3	2
18	*Quercus lobata*	Valley Oak	21	45	24	4	3	3	2
19	*Eriobotrya japonica*	Japanese Loquat	5+3+3+2+1	10	8	4	3	3	2
20	*Quercus agrifolia*	Coast Live Oak	4	21	8	4	3	3	2
21	*Quercus agrifolia*	Coast Live Oak	7	35	12	4	3	3	2
22	*Ligustrum lucidum*	Glossy Privet	6+7	25	10	4	3	3	2
23	*Quercus agrifolia*	Coast Live Oak	6	25	12	4	3	3	2
24	*Quercus lobata*	Valley Oak	48	50	30	3	3	3	2
25	*Xylosma congestum 'Variegata'*	Xylosma (off site)	6+6+7+8	25	14	3	3	3	2
26	*Ligustrum lucidum*	Glossy Privet	5+6+6+8+12	35	12	4	3	0	1
27	*Quercus agrifolia*	Coast Live Oak	15+24	45	24	4	3	0	1
28	*Prunus domestica*	Plum	2+4+5+8	21	12	3	2	3	2
29	*Quercus lobata*	Valley Oak	3+3	15	6	2	3	3	2
30	*Quercus lobata*	Valley Oak	4+5+8	18	12	3	3	3	2
31	*Quercus lobata*	Valley Oak	6+7	25	14	4	3	3	2
32	*Quercus agrifolia*	Coast Live Oak	7+11	25	15	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
33	*Quercus lobata*	Valley Oak	7	20	8	4	3	3	2
34	*Quercus lobata*	Valley Oak	9	18	10	4	3	3	2
35	*Quercus lobata*	Valley Oak	12+18	45	25	3	3	3	2
36	*Quercus agrifolia*	Coast Live Oak	4	12	8	4	3	3	2
37	*Quercus lobata*	Valley Oak	4	8	6	4	3	3	2
38	*Quercus agrifolia*	Coast Live Oak	5	14	10	4	3	3	2
39	*Quercus lobata*	Valley Oak	4+4	16	6	4	3	3	2
40	*Quercus lobata*	Valley Oak	3+4+6	18	8	4	3	3	2
41	*Quercus agrifolia*	Coast Live Oak	6+6+6	30	14	4	3	3	2
42	*Quercus agrifolia*	Coast Live Oak	3+4+6	30	14	4	3	3	2
43	*Quercus agrifolia*	Coast Live Oak	5	12	10	4	3	3	2
44	*Quercus agrifolia*	Coast Live Oak	4	8	8	4	3	3	2
45	*Quercus agrifolia*	Coast Live Oak	8+10	40	16	4	3	3	2
46	*Quercus lobata*	Valley Oak	6	25	12	4	3	3	2
47	*Quercus lobata*	Valley Oak	13	40	18	4	3	3	2
48	*Quercus agrifolia*	Coast Live Oak	13	35	15	4	3	1	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
49	*Quercus lobata*	Valley Oak	26	45	20	4	3	1	1, 6, 7, 8, 9
50	*Quercus agrifolia*	Coast Live Oak	7	20	14	4	3	1	1, 6, 7, 8, 9
51	*Quercus lobata*	Valley Oak	7+8+12+13	40	18	4	2	3	2
52	*Quercus lobata*	Valley Oak	8+12	20	14	4	3	1	1, 6, 7, 8, 9
53	*Quercus lobata*	Valley Oak	16	40	18	4	3	1	1, 6, 7, 8, 9
54	*Quercus agrifolia*	Coast Live Oak	4	10	6	4	3	1	1, 6, 7, 8, 9
55	*Quercus lobata*	Valley Oak	3+4	15	6	4	3	3	2
56	*Quercus agrifolia*	Coast Live Oak	6+8	14	12	4	3	1	1, 6, 7, 8, 9
57	*Quercus lobata*	Valley Oak	1+2+3	12	8	4	3	1	1, 6, 7, 8, 9
58	*Quercus lobata*	Valley Oak	7	14	8	4	3	3	2
59	*Quercus agrifolia*	Coast Live Oak (off site)	14	35	14	4	3	3	2
60	*Quercus lobata*	Valley Oak	12+18	40	18	4	3	3	2
61	*Quercus agrifolia*	Coast Live Oak	4	14	8	4	3	3	2
62	*Pistache chinensis*	Chinese Pistache (off site)	16	45	24	4	3	2	1, 6, 7, 8, 9
63	*Quercus agrifolia*	Coast Live Oak	6+7	14	18	4	3	3	2
64	*Quercus agrifolia*	Coast Live Oak	5	16	10	4	3	3	2

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
65	*Pyrus calleryana*	Flowering Pear (off site)	9	16	12	4	3	1	1, 6, 7, 8, 9
66	*Quercus lobata*	Valley Oak	12+14	45	18	4	3	3	2
67	*Quercus lobata*	Valley Oak	6+8+8	40	16	4	3	2	1, 6, 7, 8, 9
68	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
69	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
70	*Pyrus calleryana*	Flowering Pear (off site)	8	15	10	4	3	1	1, 6, 7, 8, 9
71	*Pyrus calleryana*	Flowering Pear (off site)	6	15	10	4	3	1	1, 6, 7, 8, 9
72	*Quercus agrifolia*	Coast Live Oak	6+6+6+8+9	30	15	4	3	3	2
73	*Quercus agrifolia*	Coast Live Oak	6+6	12	14	4	3	3	2
74	*Quercus lobata*	Valley Oak	14	40	18	4	3	3	2
75	*no tree #75*	X	X	X	X	X	X	X	X
76	*no tree #76*	X	X	X	X	X	X	X	X
77	*no tree #77*	X	X	X	X	X	X	X	X
78	*Quercus agrifolia*	Coast Live Oak	6+8+12	40	21	4	3	2	1, 6, 7, 8, 9
79	*Quercus lobata*	Valley Oak	5+5	35	12	4	3	2	1, 6, 7, 8, 9
80	*Ficus carica*	Fig	multiple	12	12	4	3	2	1, 6, 7, 8, 9

Tree #	Species	Common Name	Trunk Diameter (dbh ± inches)	Height (± feet)	Radius (± feet)	Health (1 - 5)	Structure (1 - 4)	Expected Impact	Recommendations
81	*Quercus kelloggii*	Black Oak (off site)	12+13+13	40	21	4	3	1	1, 6, 7, 8, 9
82	*Quercus lobata*	Valley Oak	7	21	8	2	3	1	1, 6, 7, 8, 9
83	*Quercus agrifolia*	Coast Live Oak	7+4	30	12	4	3	3	2
84	*Quercus lobata*	Valley Oak	32	45	30	4	3	3	2
85	*Quercus agrifolia*	Coast Live Oak	5+5+14	30	18	4	3	3	2
86	*Quercus agrifolia*	Coast Live Oak (off site)	±20	40	25	4	3	1	1, 6, 7, 8, 9
87	*Quercus agrifolia*	Coast Live Oak (off site)	±15	40	20	4	3	1	1, 6, 7, 8, 9
88	*Quercus lobata*	Valley Oak	13	40	18	3	3	3	2
89	*Laurus nobilis*	Grecian Laurel	multiple	16	8	4	3	3	2
90	*Quercus lobata*	Valley Oak	5	30	8	3	3	3	2
91	*Quercus agrifolia*	Coast Live Oak	5+12+12	30	15	4	3	3	2
92	*Quercus lobata*	Valley Oak	12	40	18	4	3	3	2
93	*Ligustrum lucidum*	Glossy Privet	3	14	8	4	3	3	2
94	*Quercus agrifolia*	Coast Live Oak	3+3	16	8	4	3	3	2
95	*Quercus agrifolia*	Coast Live Oak	4	30	14	4	3	3	2
96	*Quercus agrifolia*	Coast Live Oak	4	20	12	4	3	3	2

KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART
19320 Sonoma Highway
Sonoma, CA

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level. The *Tree Location Plan* illustrates the location of each numbered tree.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured in inches to document its diameter at 54" above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

(5) Excellent - health and vigor are exceptional, no pest, disease, or distress symptoms.

(4) Good - health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.

(3) Fair - health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.

(2) Marginal - health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

(1) Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

(4) Good structure - minor structural problems may be present which do not require corrective action.

(3) Moderate structure - normal, typical structural issues which can be corrected with pruning.

(2) Marginal structure - serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.

(1) Poor structure - hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Construction Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation.

(3) A significant impact on long term tree integrity can be expected as a result of proposed development.

(2) A moderate impact on long term tree integrity can be expected as a result of proposed development.

(1) A minor impact on long term tree integrity can be expected as a result of proposed development.

(0) No impact is expected

Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

(1) Preservation appears to be possible. No protection required.

(2) Removal is required due to significant development impacts.

(3) Removal is required due to poor health or hazardous structure.

(4) Removal is required due to significant development impacts and poor existing condition.

(5) Removal is recommended due to poor species characteristics.

(6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.

(7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.

(8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.

(9) Prune to clean, raise, or clear the canopy, per International Society of Arboriculture pruning standards.

(10) This trunk could be located off site, but the canopy overhangs the project site.

(11) Excavation may be required within the TPZ and the dripline for development. Excavation within the TPZ of any type must adhere to the following guidelines:

All roots encountered that are 2 inches or larger in diameter must be cleanly cut as they are encountered by excavating equipment.

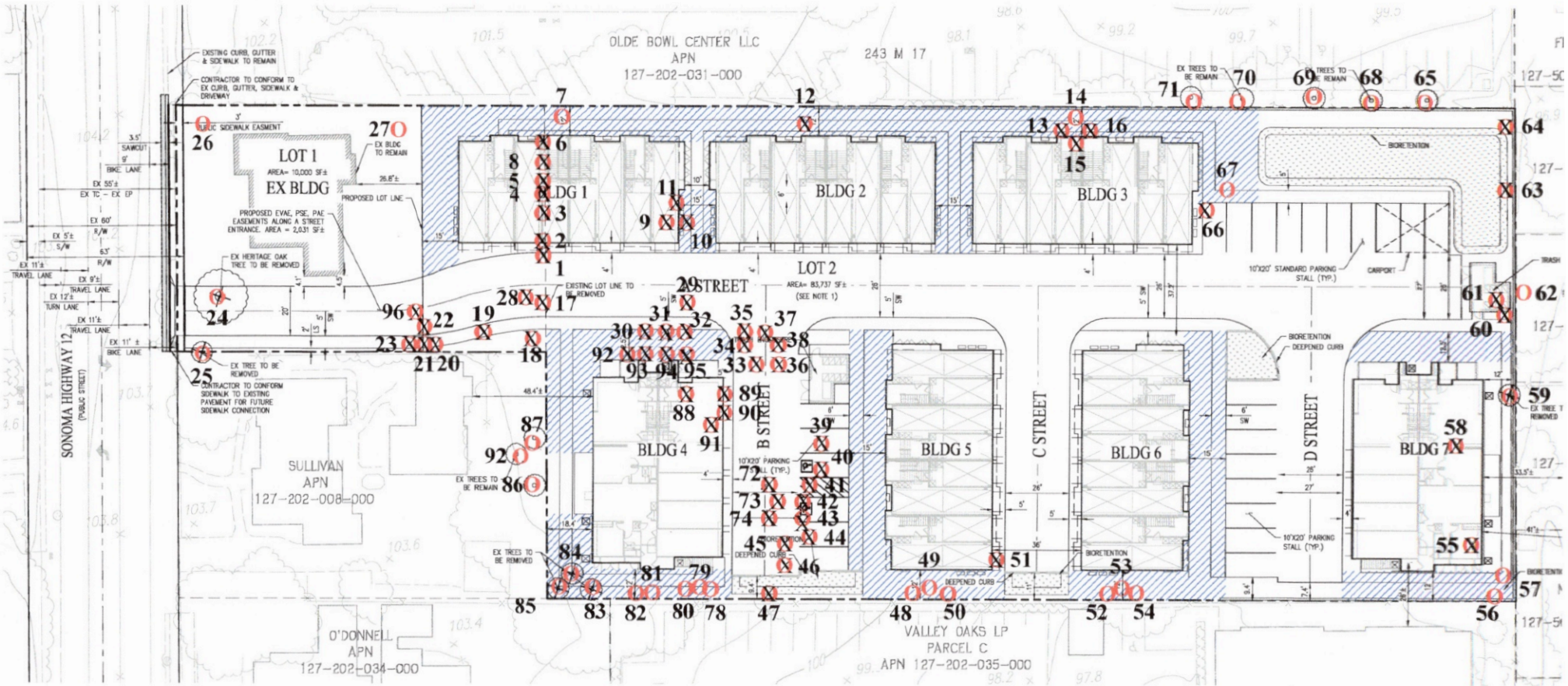
Roots may not be ripped from the ground and then trimmed. They must be trimmed as encountered and this will require the use of a ground man working with a suitable power tool.

Pruned and exposed roots greater than 2 inches in diameter must be protected from desiccation if left exposed for more than 24 hours. Cover cut roots with heavy cloth, burlap, used carpeting, or similar material that has been soaked in water, until trench or excavation has been backfilled.

If excavation impacts more than 20% of the defined TPZ then supplemental irrigation may be required to offset loss of roots. Excavation in this case should be directed by the project arborist who will determine whether mitigation is required, when, and how.

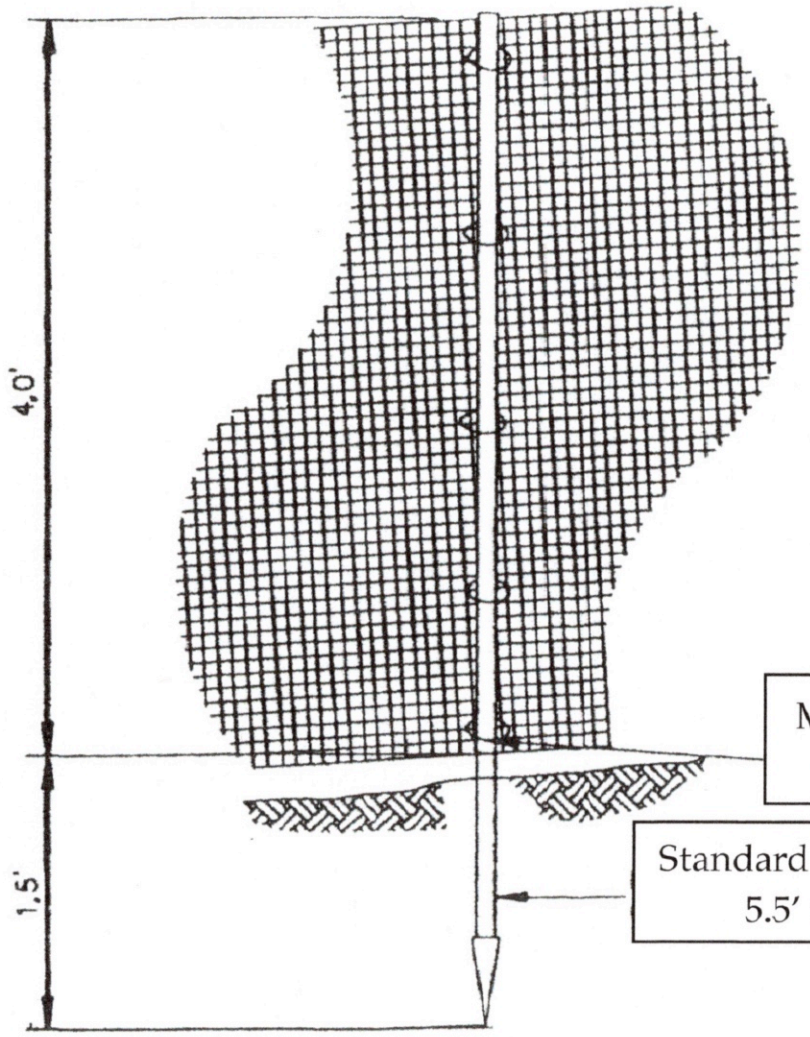
Any excavation within the defined TPZ will require that the tree be monitored on a monthly basis by the project arborist for the duration of construction and for one year beyond completion of construction. Monitoring may determine other mitigation measures that may be required to offset root loss or damage.

TREE LOCATION PLAN



TREE LOCATION AND NUMBERING PLAN
19320 Sonoma Highway
Sonoma, CA

TREE FENCING DETAIL



NOTE
Metal Wire Tree Protection Fencing

Minimum 4-ft high steel welded wire fencing with mesh size 2-in x 4-in, or arborist approved wire fence substitute. Cut and shape as needed for sloping terrain

Metal tie wire, flip tie, or equivalent, 5 per post

Standard farm quality metal 'T' post, 5.5' tall, placed 8' on center

METAL WIRE TREE PROTECTION FENCING

TREE PRESERVATION GUIDELINES

TREE PRESERVATION GUIDELINES

19320 Sonoma Highway
Sonoma, CA

INTRODUCTION

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at this site require specialized protection techniques during all construction activities to minimize negative impact on their long term health and vigor. The area immediately beneath and around canopy driplines is especially critical, and the specifications that follow are established to protect short and long term tree integrity. The purpose of this specification is therefore to define the procedures that must be followed during any and all phases of development in the immediate vicinity of designated protected trees.

Established, mature trees respond in a number of different ways to the disruption of their natural conditions. Change of grade within the root system area or near the root collar, damage to the bark of the trunk, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual impacts of these activities may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the decline process takes many years, with symptoms appearing slowly and over a period of time. Trees may not begin to show obvious signs of decline from the negative impacts of construction until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long-term health of all protected trees that a defined protection program be established before beginning any construction activity where protected trees are found. Once incorporated at the design level, it is mandatory that developers, contractors, and construction personnel understand the critical importance of these guidelines, and the potential penalties that will be levied if they are not fully incorporated at every stage of development.

The following specifications are meant to be utilized by project managers and those supervising any construction in the vicinity of protected trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. Questions which arise, or interpretation of specifications as they apply to specific site activities, must be referred to the project arborist as they occur.

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TREE PROTECTION ZONE

1. The canopy dripline is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing.

2. No encroachment into the dripline is allowed at any time without approval from the project arborist, and unauthorized entry may be subject to civil action and penalties.

3. The dripline will be designated by the project arborist at a location determined to be adequate to ensure long term tree viability and health. This is to occur prior to installation of fencing and in conjunction with the fencing contractor

TREE PROTECTION FENCING

1. Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing shall be installed at each site tree, or group of trees. Fencing shall be located at the dripline designated by the project arborist and generally illustrated on the Improvement Plans.

2. Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable, however.

3. Fencing shall be installed tightly between steel fence posts (standard quality farm 'T' posts work well) placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties, metal tie wire, or flip ties. See attached fencing detail.

4. Fencing shall serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.

5. All encroachment into the fenced dripline must be approved and supervised by the project arborist. Approved dripline encroachment may require additional mitigation or protection measures that will be determined by the project arborist at the time of the request.

6. Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

7. Fencing shall be upright and functional at all times from start to completion of project. Fencing shall remain in place and not be moved or removed until all construction activities at the site are completed.

TREE PRUNING AND TREATMENTS

1. All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.

2. All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur by, or under the direct supervision of, an arborist certified by the International Society of Arboriculture.

GRADING AND TRENCHING

1. Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non conformance may generate stop-work orders.

2. The designated dripline is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

3. Trenching should be routed around the dripline. Where trenching has been designated within the dripline, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

4. All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or during any grading activity. The tearing of roots by equipment shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

5. Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

6. Retaining walls are effective at holding grade changes outside the area of the dripline and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within a dripline.

7. Grade changes outside the dripline, or those necessary in conjunction with retaining walls, shall be designed so that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

8. Grade reduction within the designated dripline shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

9. Foundations of all types within the dripline shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures. Building footprints should generally be outside the dripline whenever possible.

DRAINAGE

The location and density of native trees may be directly associated with the presence of naturally occurring water, especially ephemeral waterways. Project design, especially drainage components, should take into consideration that these trees may begin a slow decline if this naturally present association with water is changed or eliminated.

TREE DAMAGE

1. Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

2. Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected.

3. Any tree that is significantly damaged and whose survivability is threatened, due to negligence by any contractor, shall be appraised using the Trunk Formula Method provided in the 9th Edition of the Guide For Plant Appraisal. This appraisal value will be the basis for any fines levied on the offending contractor.

MULCHING

1. Trees will benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the Tree Protection Zone. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, dyed bark, or chipped lumber will not function as beneficially. All trees that are expected to be

impacted in any way by project activities shall have mulch placed prior to the installation of protection fencing.

2. Mulch should be generated from existing site trees that are removed or pruned as part of the project. Much brought onto the site from an outside source must be from trees that are verified to be free of the Sudden Oak Death pathogen *Phytophtora ramorum*.

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ISA TREE PRUNING STANDARDS

WESTERN CHAPTER

ISA

PRUNING STANDARDS

Purpose:

Trees and other woody plants respond in specific and predictable ways to pruning and other maintenance practices. Careful study of these responses has led to pruning practices which best preserve and enhance the beauty, structural integrity, and functional value of trees.

In an effort to promote practices which encourage the preservation of tree structure and health, the W.C. ISA Certification Committee has established the following Standards of Pruning for Certified Arborists. The Standards are presented as working guidelines, recognizing that trees are individually unique in form and structure, and that their pruning needs may not always fit strict rules. The Certified Arborist must take responsibility for special pruning practices that vary greatly from these Standards.

I. Pruning Techniques

A. A thinning cut removes a branch at its point of attachment or shortens it to a lateral large enough to assume the terminal role. Thinning opens up a tree, reduces weight on heavy limbs, can reduce a tree's height, distributes ensuing invigoration throughout a tree and helps retain the tree's natural shape. Thinning cuts are therefore preferred in tree pruning.

When shortening a branch or leader, the lateral to which it is cut should be at least one-half the diameter of the cut being made. Removal of a branch or leader back to a sufficiently large lateral is often called "drop crotching."

B. A heading cut removes a branch to a stub, a bud or a lateral branch not large enough to assume the terminal role. Heading cuts should seldom be used because vigorous, weakly attached upright sprouts are forced just below such cuts, and the tree's natural form is altered. In some situations, branch stubs die or produce only weak sprouts.

C. When removing a live branch, pruning cuts should be made in branch tissue just outside the branch bark ridge and collar, which are trunk tissue. *(Figure 1)* If no collar is visible, the angle of the cut should approximate the angle formed by the branch bark ridge and the trunk. *(Figure 2)*

D. When removing a dead branch, the final cut should be made outside the collar of live callus tissue. If the collar has grown out along the branch stub, only the dead stub should be removed, the live collar should remain intact, and uninjured. *(Figure 3)*

E. When reducing the length of a branch or the height of a leader, the final cut should be made just beyond (without violating) the branch bark ridge of the branch being cut to. The cut should approximately bisect the angle formed by the branch bark ridge and an imaginary line perpendicular to the trunk or branch cut. *(Figure 4)*

F. A goal of structural pruning is to maintain the size of lateral branches to less than three-fourths the diameter of the parent branch or trunk. If the branch is codominant or close to the size of the parent branch, thin the branch's foliage by 15% to 25%, particularly near the terminal. Thin the parent branch less, if at all. This will allow the parent branch to grow at a faster rate, will reduce the weight of the lateral branch, slow its total growth, and develop a stronger branch attachment. If this does not appear appropriate, the branch should be completely removed or shortened to a large lateral. *(Figure 5)*

G. On large-growing trees, except whorl-branching conifers, branches that are more than one-third the diameter of the trunk should be spaced along the trunk at least 18 inches apart, on center. If this is not possible because of the present size of the tree, such branches should have their foliage thinned 15% to 25%, particularly near their terminals. *(Figure 6)*

H. Pruning cuts should be clean and smooth with the bark at the edge of the cut firmly attached to the wood.

I. Large or heavy branches that cannot be thrown clear, should be lowered on ropes to prevent injury to the tree or other property.

J. Wound dressings and tree paints have not been shown to be effective in preventing or reducing decay. They are therefore not recommended for routine use when pruning.

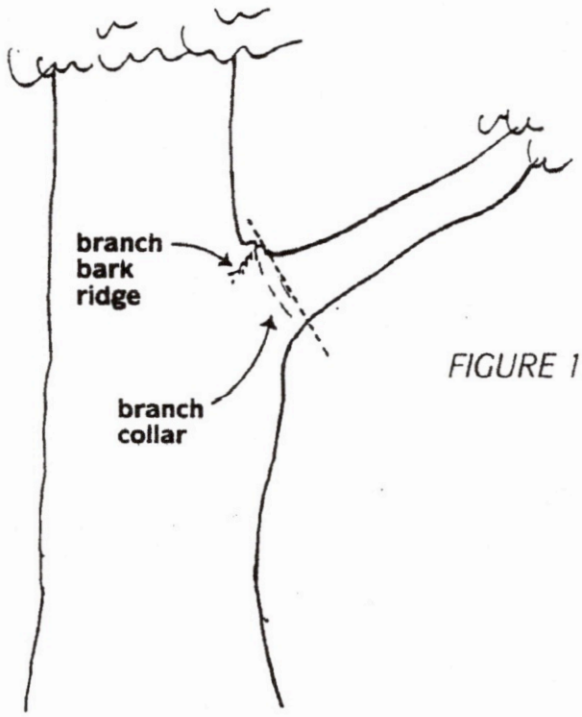

FIGURE 1. When removing a branch, the final cut should be just outside the branch bark ridge and collar.

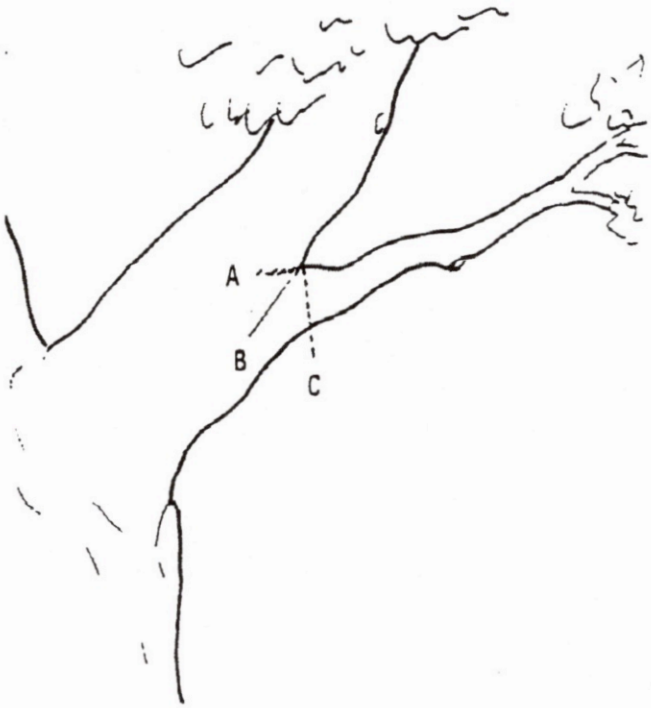

FIGURE 2. In removing a limb without a branch collar, the angle of the final cut to the branch bark ridge should approximate the angle the branch bark ridge forms with the limb. Angle AB should equal Angle BC.

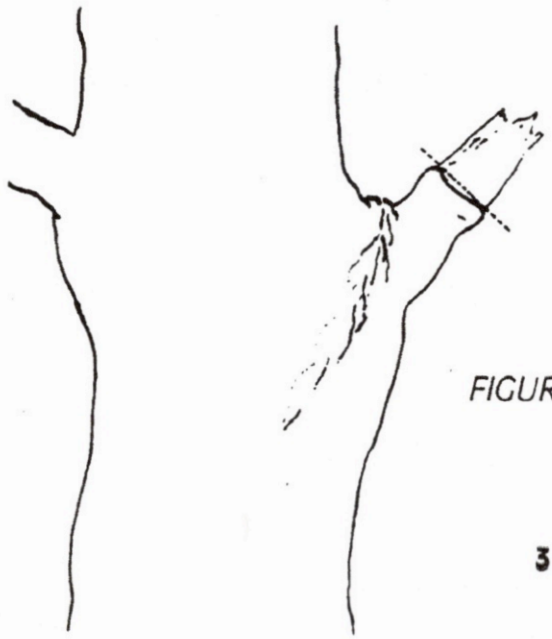

FIGURE 3. When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.

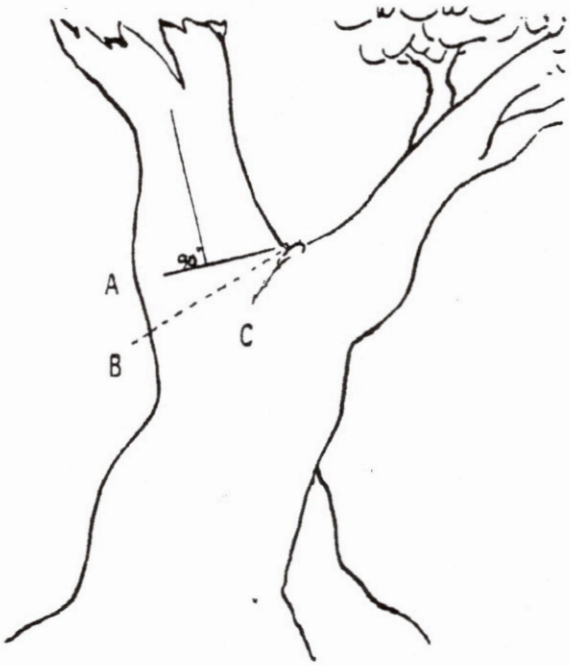

FIGURE 4. *In removing the end of a limb to a large lateral branch, the final cut is made along a line that bisects the angle between the branch bark ridge and a line perpendicular to the limb being removed. Angle AB is equal to Angle BC.*

FIGURE 5. *A tree with limbs tending to be equal-sized, or codominant. Limbs marked B are greater than ¾ the size of the parent limb A. Thin the foliage of branch B more than branch A to slow its growth and develop a stronger branch attachment.*

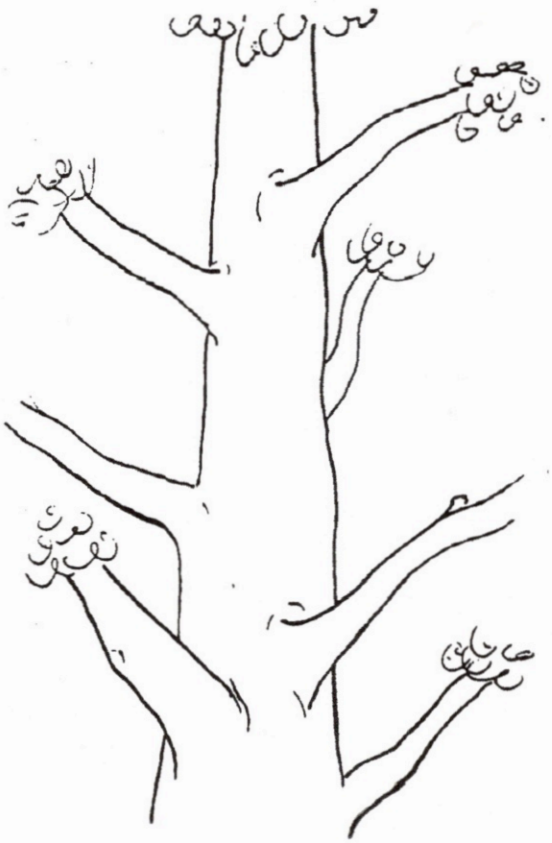

FIGURE 6. *Major branches should be well spaced both along and around the stem.*

II. Types of Pruning — Mature Trees

A. CROWN CLEANING

Crown cleaning or cleaning out is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches and watersprouts from a tree crown.

B. CROWN THINNING

Crown thinning includes crown cleaning and the selective removal of branches to increase light penetration and air movement into the crown. Increased light and air stimulates and maintains interior foliage, which in turn improves branch taper and strength. Thinning reduces the wind-sail effect of the crown and the weight of heavy limbs. Thinning the crown can emphasize the structural beauty of trunk and branches as well as improve the growth of plants beneath the tree by increasing light penetration. When thinning the crown of mature trees, seldom should more than one-third of the live foliage be removed.

At least one-half of the foliage should be on branches that arise in the lower two-thirds of the trees. Likewise, when thinning laterals from a limb, an effort should be made to retain inner lateral branches and leave the same distribution of foliage along the branch. Trees and branches so pruned will have stress more evenly distributed throughout the tree or along a branch.

An effect known as "lion's-tailing" results from pruning out the inside lateral branches. Lion's-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water-sprouts, weakened branch structure and limb breakage.

C. CROWN REDUCTION

Crown reduction is used to reduce the height and/or spread of a tree. Thinning cuts are most effective in maintaining the structural integrity and natural form of a tree and in delaying the time when it will need to be pruned again. The lateral to which a branch or trunk is cut should be at least one-half the diameter of the cut being made.

D. CROWN RESTORATION

Crown restoration can improve the structure and appearance of trees that have been topped or severely pruned using heading cuts. One to three sprouts on main branch stubs should be selected to reform a more natural appearing crown. Selected vigorous sprouts may need to be thinned to a lateral, or even headed, to control length growth in order to ensure adequate attachment for the size of the sprout. Restoration may require several prunings over a number of years.

II. Types of Pruning — Mature Trees *(continued)*

E. CROWN RAISING

Crown raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas. It is important that a tree have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within a tree.

When pruning for view, it is preferable to develop "windows" through the foliage of the tree, rather than to severely raise or reduce the crown.

III. Size of Pruning Cuts

Each of the Pruning Techniques (Section I) and Types of Pruning (Section II) can be done to different levels of detail or refinement. The removal of many small branches rather than a few large branches will require more time, but will produce a less-pruned appearance, will force fewer watersprouts and will help to maintain the vitality and structure of the tree. Designating the maximum size (base diameter) that any occasional undesirable branch may be left within the tree crown, such as ½", 1" or 2" branch diameter, will establish the degree of pruning desired.

IV. Climbing Techniques

A. Climbing and pruning practices should not injure the tree except for the pruning cuts.

B. Climbing spurs or gaffs should not be used when pruning a tree, unless the branches are more than throw-line distance apart. In such cases, the spurs should be removed once the climber is tied in.

C. Spurs may be used to reach an injured climber and when removing a tree.

D. Rope injury to thin barked trees from loading out heavy limbs should be avoided by installing a block in the tree to carry the load. This technique may also be used to reduce injury to a crotch from the climber's line.